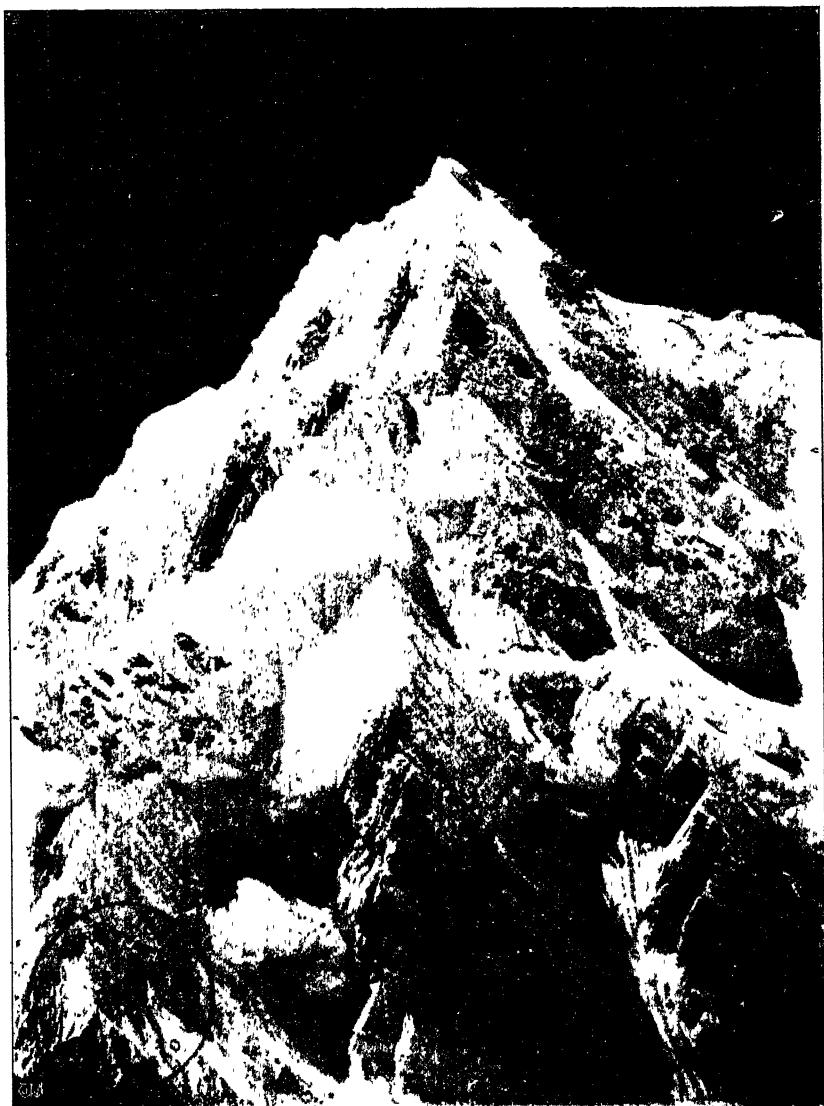


ROUND KANGCHENJUNGA



Telephotograph

THE CREST OF SINOICHUM.

ROUND KANGCHENJUNGA

A NARRATIVE OF MOUNTAIN TRAVEL
AND EXPLORATION

BY

DOUGLAS W. FRESHFIELD

WITH ILLUSTRATIONS AND MAPS

LONDON
EDWARD ARNOLD
Publisher to H.M. India Office
1903

(All rights reserved)

TO

SIR JOSEPH DALTON HOOKER

F.R.S., K.C.S.I., C.B., M.D., D.C.L.

THE PIONEER OF MOUNTAIN TRAVEL

IN THE EASTERN HIMALAYA

THIS VOLUME IS DEDICATED

P R E F A C E

IN the following pages I have done my best to record faithfully the impressions the landscapes of the Eastern Himalaya have left in the memory of one who has been from boyhood familiar with the Alps, and can use, therefore, as a standard of comparison a range familiar to most English readers. I am, of course, conscious that my task is beyond me; that to describe the Himalaya worthily calls for powers to which I can make no pretence. In my endeavour to be topographically precise, I have no doubt become prosaic. In my desire not to be lengthy I may be sometimes obscure. I must be content to do what I can, to record with all the emphasis I am capable of my conviction that nowhere else on the earth's surface can there be found, within so small a radius, a combination of tropical luxuriance, sylvan beauty, and mountain sublimity equal to that which meets the traveller's eyes among the valleys and highlands of Sikkim and Eastern Nepal.

The wanderer on the woodland paths beyond Darjiling looks down between the crowns of the tall forest trees into the shadowy depths of blue valleys, out of which shining sunlit mist-columns rise at noon against a luminous sky. Before him a procession of soft ridges, stretching rank behind rank, in gently undulating lines—dotted here and there by the white specks that mark the situation of Buddhist monasteries—fills the interval between his stand-point and the glacier-draped pinnacles and precipices of

the snowy Himalaya. He passes from the zone of Sal forests, of tree-ferns, bamboos, and orange-groves, through an endless colonnade of tall-stemmed magnolias, oaks, and chestnut trees, fringed with delicate orchids and festooned by long convolvuluses, to the region of gigantic pines, junipers, firs, and larches. Down each ravine sparkles a brimming torrent, making the ferns and flowers dance as it dashes past them. Superb butterflies, black and blue, or flashes of rainbow colours, sail in and out between the sun-light and the gloom, or, the fairies of this lavish transformation scene of Nature, evade their pursuers by turning, as they settle, into exact imitations of dead leaves.

The mountaineer pushes on by a track half buried between the red twisted stems of tree-rhododendrons, hung with long waving lichens, until he emerges at last on open sky and the upper pastures—the alps of the Himalaya—fields of flowers, of gentians and edelweiss, of primulas and poppies, which blossom beneath the snow-fields that encompass the ice-mailed and avalanche-fluted shoulders of the giants of the range.

The name Kangchenjunga (however it may be spelled) is fairly familiar to the British public. A superb object from 'the Mall' of the most frequented health resort of Bengal, the great mountain is the most conspicuous of Himalayan peaks. Of late years a few officials and travellers have undertaken the pilgrimage to its southern base, which had been made from prehistoric times by the native dwellers on the lower spurs. But, owing partly to the cost and the difficulty of travel in Independent Sikkim, and partly to the obstacle presented by the Nepalese frontier, no European had, up to the end of the nineteenth century, gone round the mountain. Even Sir Joseph Hooker had not approached near enough to it to explore its glaciers, which had consequently never

been described by any competent hand; while many of them had never been visited by Englishmen. In the sheets of official surveys they had been alternately ignored and caricatured. There was no map in existence which even pretended to show the snows and glaciers of the region on any system recognised in modern scientific surveys.

This volume is a description of the first Tour of Kangchenjunga made by Europeans. Its object is not so much to offer another tale of mountaineering adventure as to provide an account of the scenery and glacial features of the Kangchenjunga Group that may be serviceable to Alpine climbers and men of science, and not without interest for those who 'love the glories of the world' and count among them great mountains.

It is of course impossible to go up and down 75,000 feet without some climbing, in the popular sense of that word. But in the technical Alpine sense we had far too little mountaineering for my taste. Rope and ice-axe played but a very subordinate part in our journey. This was our misfortune rather than our fault. The tremendous rainstorm of September 1899, after devastating Darjiling and its tea-gardens, swept across Kangchenjunga into Tibet in the form of a premature snowfall, lowering the snow-level nearly 4000 feet and practically closing the highest region.

Under such conditions many travellers would, I think, have felt obliged to turn back. It was as much as mountaineers could do to force with a baggage-train a series of passes varying from 16,000 to over 20,000 feet. Any loftier ambitions we had necessarily to give up. But, apart from the labour of beating a track over miles of soft and untrodden snow, the difficulties we encountered were such as are commonly met with on Alpine expeditions of the character of the Strahleck Pass and Mont Blanc.

That is to say, there were no difficulties at all, from the point of view of an Alpine guide or climber. It is from this point of view, and not from that of the average traveller, that I have described our journey. For I am convinced that the next party of my friends and comrades who are fortunate in their season, and run over flowers where we waded in snowdrifts, will find our great pass a very ordinary affair. They will be able probably to reach heights of at least 24,000 feet with less labour than it cost us to gain 20,000 feet. On the other hand, a traveller who is accustomed chiefly to horseback, and whose one idea of danger is 'falling over the Khud,' will, I fancy, find some of the Himalayan screes and moraines exceedingly laborious.

It has been from time to time the privilege of mountaineers to criticise and to make suggestions, or to furnish materials, which have led to marked improvements in the Government surveys of the countries concerned. I should fail in my duty did I not endeavour humbly to follow in the footsteps of my predecessors by suggesting by precept, and, as far as my means allow, by example, the principle on which a glacier map of Sikkim, which will be of value to the physical geographer, may be constructed. I therefore venture to offer, by no means as a perfect or a final map (a complex glacial labyrinth like that of Kangchenjunga is not mapped in a month), but as a specimen of the right method to delineate glaciers, the map given herewith.

For its construction I am in the main indebted to my companion, Professor Edmund Garwood, under whose close and constant supervision it was drawn by Mr. Batchelor in the Royal Geographical Society's Office. I believe that it attains to very fair accuracy of detail in the glacier basins which we ourselves explored in fine

weather. Elsewhere it at least indicates approximately the extent of the ground covered by snow and ice. According to my experience, the best spur to further action is to give people something to criticise. This, at any rate, we have done. For almost all my illustrations I have to thank Signor Vittorio Sella, who also accompanied me. He has proved his skill as a mountain photographer in the Alps, in the Caucasus, and in Alaska. But he has never found a nobler or more varied field, or worked with more uniform success, than under the shadow of the highest Himalaya.

My obligations to the Indian Government, and more particularly to its local officials, Captain Le Mesurier, Acting Political Officer in Sikkim, and Mr. Earle, Deputy Commissioner at Darjiling, at the time of my visit, call for very special acknowledgment. Without their energetic and generous help our journey would hardly have been possible.

I have also received much kind assistance from the present head of the Survey at Calcutta, Colonel Gore, R.E.

In my first chapter and in the List of Authorities annexed I have, I believe, referred to the literary productions of most of my predecessors in this region. First and foremost among them stand the two volumes of *Himalayan Journals*, published by Sir Joseph Hooker as long ago as 1854, but still our chief authority on Sikkim, a work to which I am very largely indebted. Nor happily do my obligations to its author end here; it has been my privilege and pleasure to compare experiences and talk over many points of interest with Sir Joseph Hooker himself.

Major (now Colonel) Waddell's *Among the Himalayas* I have also frequently consulted, although the ground we covered was to a great extent different. The official publications I have made use of are for the most part

referred to in the text or in an Appendix. In a separate Appendix I have reprinted the entertaining accounts of their adventures among the passes of Eastern Nepal given by the Native Surveyors, in whose footsteps we more or less trod. Professor Garwood has supplied a Geological Note, illustrated with a map, which summarises the information obtained both by himself and his predecessors.

I have ventured in the text to comment on the present political situation on the Tibetan frontier and on the events that have led up to it. But since the following pages were written, and while they have been in the press, announcements have appeared in the newspapers which indicate that steps are being taken somewhat on the line of the policy here suggested. The roads in Sikkim are, we are informed, being improved, access to the frontier passes is being made easy, and the frontier itself demarcated and re-mapped. The Tibetan Government has been subjected to sufficient pressure to induce it to promise to send envoys to discuss with British Commissioners at Kambajong the proper fulfilment of the terms of the treaty of 1890.

Whether it will keep its promise seems to be doubtful. In ways that are dark, and tricks they have learned by experience to be by no means vain, the rulers of Lhasa are proficient. There is, however, risk for them that in dealing with the present Viceroy they may find their craft less successful than it has proved with some of his predecessors.

CONTENTS

CHAPTER I	
THE HIMALAYA,	1
CHAPTER II	
SIKHIM AND KANGCHENJUNGA,	14
CHAPTER III	
DARJILING,	30
CHAPTER IV	
THE FOOTHILLS,	45
CHAPTER V	
THE TEESTA GORGES,	77
CHAPTER VI	
THE ZEMU GLEN AND GLACIER,	95
CHAPTER VII	
LHONAK,	128
CHAPTER VIII	
THE JONSONG LA,	150
CHAPTER IX	
THE VALE OF KANGBACHEN,	169
CHAPTER X	
THE KANG LA,	192

CHAPTER XI

JONGRI AND THE GUICHA LA,	PAGE
---------------------------	------

216

CHAPTER XII

THE RETURN TO DARJILING,	244
--------------------------	-----

CHAPTER XIII

TIBETAN CURIOS, BY MRS. LE MESURIER,	262
--------------------------------------	-----

APPENDIX A

THE GEOLOGICAL STRUCTURE AND PHYSICAL FEATURES OF SIKHIM, BY PROFESSOR E. J. GARWOOD, M.A., F.G.S.,	275
--	-----

APPENDIX B

NOTES ON THE MAPS, BY PROFESSOR E. J. GARWOOD, M.A., F.G.S.,	300
---	-----

APPENDIX C

THE NARRATIVES OF THE PUNDITS,	308
--------------------------------	-----

APPENDIX D

THE NATIVE NAMES OF THE HIGHEST MEASURED PEAK, BY THE AUTHOR,	354
--	-----

APPENDIX E

LIST OF BOOKS AND MAPS CONSULTED,	359
-----------------------------------	-----

APPENDIX F

CATALOGUE OF PHOTOGRAPHS TAKEN BY SIGNOR V. SELLA DURING THE TOUR OF KANGCHENJUNGA,	364
INDEX,	369

LIST OF ILLUSTRATIONS AND MAPS

	<i>Frontispiece</i>
THE CREST OF SINIOLCHUM,	<i>Frontispiece</i>
LEPCHAS ,	<i>To face page</i> 36
THE SNOWS FROM DARJILING (PHOTOGRAPHED BY T. HOFMANN)	42
WILD HYDRANGEAS,	50
THE SNOWS FROM GANTOK,	70
THE TEMPLE AT TUMLONG,	82
IN THE FOREST NEAR TUMLONG,	84
THE TEESTA GORGE ABOVE CHUNGTHANG,	90
THE APPROACH TO LACHEN,	94
RHODODENDRONS IN THE ZEMU VALLEY,	98
THE NATURAL BRIDGE BELOW THE ZEMU GLACIER,	102
KANGCHENJUNGA FROM GREEN LAKE PLAIN BEFORE THE SNOWFALL,	108
THE CLIFFS OF KANGCHENJUNGA,	114
THE FIVE PEAKS OF KANGCHENJUNGA AFTER THE SNOWFALL,	122
THE LOWER CAMP BY THE ZEMU GLACIER,	124
SINIOLCHUM,	126
RINSING,	130
THE TENT PEAK AND KANGCHENJUNGA FROM LHONAK,	146
THE LIMESTONE RANGE ABOVE THE SAYOK CHU,	148
THE JONSONG LA FROM LHONAK,	154
BELOW THE JONSONG LA, NEPALESE SIDE,	158
CAMP BELOW THE JONSONG LA,	162
KANGBACHEN, JANNU, AND THE DYKE OF THE JANNU GLACIER,	178
JANNU FROM ABOVE KANGBACHEN,	180
KHUNZA, LOOKING NORTH,	188
JANNU FROM CHUNJERMA,	198
THE LAPCHIKANG GROUP FROM CHUNJERMA,	202
MOUNTAINS BEYOND KANGBACHEN FROM CHUNJERMA,	204
CAMP AT JONGRI,	218

KANGCHENJUNGA FROM ALUKTHANG,	To face page	222
PANDIM FROM THE GUICHA LA,	„	228
PANDIM FROM THE VALLEY OF THE PRAIG CHU,	„	230
KANGCHENJUNGA FROM NEAR JONGRI,	„	234
ROPE BRIDGE BELOW YOKSUN,	„	252
KABRU AND KANGCHENJUNGA FROM PAMIONCHI,	„	254
THE TEMPLE DOOR, PAMIONCHI,	„	258
TIBETAN CURIOS (PHOTOGRAPHED BY G. MILLAIS),	„	263
THE CREST OF PANDIM,	„	290
HANGING VALLEYS FROM JONGRI (2) (PHOTOGRAPHED BY E. GARWOOD),	„	298
PEAKS SEEN FROM KATMANDU (AFTER DR. BOECK),	page	356
THE LAPCHIKANG GROUP FROM SANDAKPHU AND CHUNJERMA (2), <i>To face page</i>		358

P A N O R A M A

THE KANGCHEN GLACIER,	<i>To face page</i>	172
---------------------------------	---------------------	-----

M A P S

FACSIMILE OF PORTION OF SARAT CHANDRA DAS'S ROUTE MAP, . . .	<i>page</i>	301
GEOLOGICAL MAP OF SIKHIM,	<i>To face page</i>	306
SKETCH MAP OF THE GLACIERS OF KANGCHENJUNGA,	<i>At end</i>	

The Illustrations, with the exceptions noted above, are from photographs by Signor Vittorio Sella. A few have been previously published in the *Alpine Journal* and the *Geographical Journal*.

CHAPTER I

THE HIMALAYA

Tied to run afoot
Even to the frozen ridges of the Alps,
Or any other ground inhabitable,
Where ever Englishman durst set his foot.

FOR primitive man the inanimate hardly exists. The so-called savage is the most thoroughgoing of animists. He recognises a living personality in every conspicuous natural object within his daily round. Slowly and reluctantly, one by one, the goblins who haunt the hearth, the demons who lurk in each fantastic crag or boulder, the gentler spirits of the streams and groves, retire before the advance of civilisation and science. But the human imagination, as much as the human body, needs a playground, and at the same time the human intellect resents a void. The uninhabitable regions, the pathless tracts of sand or snow, the desert and the glacier, become consequently the refuge of the Unseen Powers of the Universe. In all ages the Waste and High Places of the Earth have been peopled with creatures of phantasy, or recognised as the dwellings of Divinity. Mountain Worship in one form or another is as old and as widespread as mankind. From the sentiment of a savage to that of a modern poet or philosopher—a Shelley or an Emerson—there is, no doubt, a long step. But throughout the centuries the mountain has stood as a symbol of the existence of something beyond and above the common ken of the dwellers at its feet. From David

to Ruskin prophets and poets have 'lifted up their eyes to the hills,' and found help. Christian and Buddhist monks have retired to the fairest retreats enclosed among the Alps or the Himalaya, to Engelberg and Chamonix, Pamionchi and Gantok. This spiritual attraction of high mountains has depended largely on their comparative remoteness and inaccessibility, on their lying far apart from the dwellings and common haunts of men. Encircle a mountain with monster hotels; defile its valleys with the coal-smoke of engines that drag a perpetual merry-go-round of crowded cars; sprinkle its skyline with huts or barracks, capable at a pinch of holding a hundred guests; bind its crags in chains, and encourage suicide by marking out on them red tracks for guideless tourists, and it loses much of its primitive charm. The temple is given over to the money-changers. It may still serve excellently as a sanatorium or a gymnasium, but it must attract quite a different public.

There will, doubtless, always be mountain-lovers and mountaineers, young as well as old, who are something more than invalids or athletes or mere tourists; who desire during their holidays to change their habits and mode of life as well as their climate. Their motives for travel are not only health or scenery or climbing feats, but all that accompanies, or used to accompany, Alpine ascents. The evening spent in the village inn with the Curé who was half your host, and the chamois-hunter who was to be your guide next day; the night in the chalet, where you shared the herdsmen's fare and hay-bed, or the lonely bivouac in the cave opposite some unknown glacier or under some unconquered peak; the long climb on the virgin crest with no certainty of success up to the moment when you saw nothing overhead but blue sky: these are the memories that recur most frequently to us early explorers,

and such, or similar, delights we are fain to seek where they may still be found.

At the same time, we should be sorry to discourage those who have not the time or the opportunity to go further from frequenting the Alps. Their charm is inexhaustible; and, let us hope, in the main, indestructible. We must admit that the Riffel and the Wengern Alp can never again be what they were; that some of our favourite shrines have been desecrated. But the Alpine region is large, and its variety infinite. The crowd flows through it in narrow streams; it stagnates in a few obvious pools, or 'centres,' and that only at certain seasons. With a little industry and intelligence, a map and an 'Alpine Guide,' it is not difficult to discover districts that, properly approached, can still furnish the old delights. There are valleys which have not yet opened their gates to Cosmopolis; peaks which can be climbed without danger from broken glass, and on which sitting-room may still be found, even in August; inns where dress clothes are not worn—even by a waiter.

But some of us elders, unsocial wanderers who fly the crowd, who were spoilt in our youth by the ready fields for exploration presented us in Central Europe, are naturally tempted, when the opportunity comes, to look for regions in the condition in which once out-of-the-way districts of the Alps—the Engadine, Dauphiné, or the Dolomites—were found by their early visitors; regions where the kindred pursuits of travel and mountaineering can be combined with the rarer pleasures of discovery and of conquest. There is a further motive, which is driving not a few of the surviving pioneers of the Alps to extend their wanderings. We long to compare the familiar snows we have known and loved so well with those of still mightier ranges. We, connoisseurs in mountain scenery

as we think ourselves, who have found, in the words of our precursor, Professor James Forbes, 'a pleasure, peculiar, exquisite, and impossible accurately to define,' in the exploration of the High Alps, desire, before either our limbs or our eyes fail us, to make acquaintance with the greater ranges of the globe, the Caucasus, the Andes, or the Himalaya.

Dr. Johnson's friend, Mrs. Thrale, in one of her letters, calls Switzerland, somewhat quaintly, 'the Derbyshire of Europe.' In a similar spirit the Himalaya have been described as 'the Alps of Asia.' It must be remembered that if, compared to the Alps, they are not quite what that chain is to English hills, yet they are nearly twice as high, and who shall say how many times as extensive, as the ranges of our familiar playground.

To see the Himalaya, in the sense in which a tourist, who drives over one or two of the carriage passes, and is taken by train up the Rigi or Monte Generoso, sees the Alps, has, within the last few years, become a comparatively easy matter. All that is needed is leave of absence from business, or family ties for six, or even four, months, and a couple of hundred pounds in one's purse. But to explore and map any single Himalayan district, the mountains of Sikkim, Kumaon, or Kashmir, in the spirit and method of a mountaineer, that is to say, as Mr. Adams-Reilly explored the range of Mont Blanc, or Mr. Tuckett the Orteler Group, or Mr. Coolidge Dauphiné, is quite another affair.

A 'trip to the Himalaya' is a trifle; in many districts travel along the paths and tracks below the snow-level known to the natives is no very serious matter;¹ but a

¹ See, however, Major Waddell's *Among the Himalayas*, pp. 50-58, from the sentence beginning, 'Travelling in Upper Sikkim is a very big business indeed,' for a graphic description by an expert of the difficulties and hardships of *ordinary travel* in the particular region I am about to describe.

mountaineering expedition among the unexplored peaks and glaciers still remains a formidable adventure, calling for much preparation and some experience and forethought.

The first difficulty that meets the would-be explorer is the selection of his field of discovery. The Himalayan chain is one thousand five hundred miles long; Kangchenjunga is as far from Nanga Parbat as the Gross Glockner in Carinthia is from Mont Perdu in the Pyrenees. The climbing season in the Indian Alps is unfortunately short. An additional complication is introduced by the fact that in many of their most inviting districts the summer months and the rainy season coincide. It is difficult to explore—at least in a mountaineering sense—unknown ranges among continual mists and under a frequent shower-bath. And it becomes exceedingly dangerous to do so, to venture on steep slopes or under cliffs, whether of rock or snow, when alternate heat and damp are producing constant rock-falls and avalanches. In warmer and moister regions than the Alps it is not what slips from under the climber—though there is increased risk also from this cause—as what may fall on him that constitutes his chief and least avoidable danger. In the high solitudes of Asia every precipice has its hanging glacier, ready to discharge avalanches. Frozen cataracts, every drop in which weighs tons, rush down thousands of feet, sweeping and polishing the crags and choking the chasms of the lower icefalls as they pass over them. Again, in the Eastern Himalaya, by the time the autumnal fine weather has set in, frost is already binding the streams and turning brown the grasses in the upper valleys, thereby driving away from the high grazing-stations their scarce inhabitants, the shepherds and their herds of long-haired yaks. In the Alps, October is often a glorious month; yet to climb great peaks in October is a feat comparatively seldom attempted. To make new

ascents, at the same season, at Himalayan altitudes, where the risk of frost-bite is necessarily greater, must be reckoned for many reasons a far more doubtful and hazardous adventure.

Time and place determined, a party has to be organised. Now, for hard climbing, the active mountaineers ought not to be fewer than four. And they must be something more than climbers. An ordinary journey is admittedly a test of temper. But it is nothing to mountaineering, which is apt to condense into a brief space the trials and perils of travel. It is, as a rule, no easy matter to secure the right comrades for a long expedition. A companion who cannot lay aside personal prejudices, or adapt himself to novel surroundings, is worse than none. Some travellers, Mr. E. Whymper, for instance, have preferred to travel without other companions than Alpine guides whom they could if needful dismiss. But if the whole truth were told, it would be learned that Swiss peasants too often prove uncongenial and even exasperating society in a new country. That there have been brilliant exceptions to this rule I should be the very last to deny. One of my truest and best friends through life has been a guide.

The next task to be undertaken—since the ordinary paraphernalia of the Asiatic traveller are far too cumbrous for a mountaineer—is the choice of a light and complete camp equipment, tents and stores suitable for heights where no fuel will be available and fresh food is at the best uncertain. It is expedient before leaving England to purchase provisions, sufficient to feed the Europeans of the party while they are beyond the homes and tracks of men.¹

¹ I can, from personal experience, strongly recommend the plan, initiated by Signor V. Sella on H.R.H. the Duke of the Abruzzi's Alaska Expedition, of arranging complete provisions for each day for the Europeans of the party in separate packages. It saves waste of material, time, and temper. Our provisions came

Arrived in the East, the travellers, unless they have previously taken care to ascertain the views of the Indian Government, are liable to find their plans suddenly thwarted by superior order. The mountains beyond Kashmir towards Hunza and Chitral, for instance, are at present forbidden to the unofficial traveller, while in Independent Sikkim he requires a permit, which, however, is, as a rule, very readily granted. Having secured the goodwill of the Government, the traveller may count, if he is moderate in his demands and gives fair warning of what his aims are, on the friendly services of its local officials, services which they are most ready to offer to any visitor who can assert any reasonable claim on them. Their help and experience are useful in many ways, above all in collecting coolies and organising transport at the starting-point. Without such aid weeks may easily be wasted in tiresome preliminaries.

Again, unless one of the travellers not only speaks Hindustanee, but has also some acquaintance with the local hill-dialects, a climbing-party needs an interpreter very different in calibre from the 'boy' who shows the ordinary 'globe-trotter' round the sights of India. He ought to be able to talk to the motley crowd of camp-followers in their different dialects, to control their wayward terrors and fancies, and to overcome without violence the home-sickness that may lead them to make a sudden bolt at any, and by preference at the most critical, moment. Such a companion—a 'dragoman' he would be called in the Nearer East—is most likely to be found at the disposal of a Political Officer.

Transport comes first and last among the difficulties of

from the Army and Navy Stores, and were satisfactory in every respect. Careful packing is essential, particularly if the goods are to be placed at the mercy of the Peninsular and Oriental Company—in my experience the most reckless of carriers.

Himalayan travel. The passes, and still more the bridges and valley paths—in Sikkim at any rate—are often impracticable for laden animals, even for yaks, and an unwieldy train of coolies becomes therefore a necessity. Now, coolies drawn from a sub-tropical region have a very natural and reasonable dislike to what seem to them purposeless intrusions upon demon-haunted rocks and snows. In the first place, the climate is cold and fuel is scarce. But these are not their only objections. They are firmly convinced that every mountain has for inhabitants spirits as malicious as the ghost which, in the belief of the good citizens of Luzern, haunted Pilatus. To disturb such a formidable devil as that figured on the walls of the Buddhist temples as the God of Kangchenjunga is, they consider, a folly which no one but a Sahib would dream of committing. Again, most Sahibs are sadly given to take away life, to shoot in the precincts of a Lamasery, or to kill certain animals—for instance, they may destroy a mountain rat, an act of sacrilege involving serious penalties. Unless, therefore, the coolies are judiciously humoured, they will show no scruple in quitting their employer at the very first opportunity, and it is perhaps difficult to blame them severely for their desertion.

Those who have read the early tales of Alpine adventure will remember the part played by the porter who always went wrong at the most critical moment; or at any rate, was always accused whenever anything went wrong. The Himalayan coolie train is the Swiss porter multiplied fifty-fold, and provided with additional characteristics of an unexpected and singularly exasperating nature. The native's chief food is rice, at best a bulky article. In our case, carrying three weeks' provisions, on an average, one half of each man's load consisted of his own consumption. The carrying capacity of the whole troop, as far as luggage

was concerned, was reduced therefore to that extent. Again, the Sikkim coolie has a rooted antipathy to the very first essential to success in high climbing—an early start. His two most fixed ideas are: first, not to uncurl himself from inside his rug until the sun strikes and warms him; next, never to start until he has cooked and eaten his rice. If you try to force him to rise with the dawn—and the dawn is none too early so near the tropics—he is apt to leave you without warning, as some American travellers have recently learned to their cost. My old friend, the Caucasian, has as a porter often proved a trial to his employers; yet compared to the Sikkim coolie he is a mail-coach to a bullock-cart. The latter is a true child of nature. He treats as toys, misuses, and then throws away, the cloth boots and spectacles you have provided him with as preservatives against frostbite and snow-blindness. Consequently, after his first day on the snows he is apt to appear before you a pitiable object, with white, frost-bitten toes, sore eyes, and a sooty face—he prefers soot to spectacles as a preservative from sunburn.

And yet it is difficult for the traveller to feel angry with him, even when he has foiled his best-laid schemes. From the coolie's point of view, his employers are so palpably in the wrong. There is something obviously extravagant in our demand to have goods carried beyond the summer yak-pastures into the haunts of goblins capable of making short work of any solitary wanderer. Why should he follow in the footsteps of mad Sahibs who camp for weeks among the storehouses of snow, who take him to the outer gates of the cold hell depicted on his temple frescoes and banners?

It may seem natural to assume that many of these difficulties need not affect Anglo-Indian officials and officers. They, the reader may be disposed to assume,

might go on climbing tours quite as easily as they constantly do on shooting tours in what they quaintly call 'the Hills.' As a matter of fact, Anglo-Indians seldom climb in the technical sense of that word; and they have good reason for their abstention. To attack high peaks or explore great glaciers in safety a party of four is, as I have already insisted, necessary. Now, in all India it might be difficult to make up such a party, every member of which had the Alpine training which renders a man capable of climbing difficult ice-peaks safely without guides. Moreover, up to the present time very few of the native hill-men, good as they often are on rocks, have learned enough icecraft to play the part of Alpine guides on a steep snow-slope, or in a broken ice-fall. The 'mountaineering' practised by surveyors in the Himalaya, however spirited of its kind, has not, as a rule, been mountaineering at all in our European sense of the word. I have met with more than one of the professed 'Indian Mountaineers,' who on occasion write letters to the newspapers on Himalayan exploration, who did not know one end of an ice-axe from the other, and to whom the use of the rope was a mystery.

Yet the difficulty is by no means insoluble. Major Bruce, of the Fifth Gurkhas, has, in my opinion, already shown the way to solve it, by training, with Sir Martin Conway's help, some of his soldiers in the Swiss Alps. It is notoriously dangerous for a civilian to make any suggestion in military matters. 'Soldiers can only be criticised by soldiers' is a maxim that is, or was until lately, firmly held in every mess-room. But it can hardly be presumptuous to suggest that in India, a country with an extensive mountain frontier, it might be profitable to take a step which has been taken in all the European States which possess an Alpine frontier. France, Italy, Austria, Switzerland, have each created 'Alpine Corps,' and exercise

them every summer about and above the snow-level. It is obvious that such a step cannot and will not be taken in India solely in order to suit the convenience of mountaineers, and to further the progress of mountain exploration. But if it ever is taken, as I believe it must be, on grounds of military expediency, one of the first difficulties that an explorer of the High Himalaya has to face, that of finding disciplined and competent porters may, with a little goodwill on the part of the Viceroy and Commander-in-Chief for the time being, be solved.

It is to be presumed that the first to profit would be the officers of the 'mountain' regiments or companies. May we not hope that, when the younger officers who are now learning—sometimes despite their immediate superiors—to recognise the military importance of a quick eye for the features of landscape and the details of a map rise to places of authority, it may be recognised that mountaineering is not only a fine form of sport, but an excellent practical training for a campaign in any hill-country. I look forward to the time when India will have not only its Himalayan Club, but Himalayan regiments like the Italian *Alpini*, when officers on leave will be encouraged to bring back something besides hunting trophies, topographical sketches of hitherto unknown glaciers and geological specimens from maiden peaks; when one or two companies of Gurkha soldiers will have been trained—they are magnificent raw material—up to the level of good Alpine porters. If there were fifty men in India skilled in the use of rope and ice-axe and able to fetch and carry to high mountain bivouacs, and if these men, or some of them, were at the disposal of Anglo-Indian mountaineers, or of climbers recommended by the Alpine Club, the chief obstacle to the conquest of the great peaks of the Himalaya would, in my opinion, be removed. It is difficult to see how any first-

class Himalayan summit is to be reached without such aid. Alpine porters from Europe are not only very expensive; they are apt to turn sick, or homesick, when most wanted, and I fear there is little hope of persuading the Directors of East Indian Railroads to imitate the spirited conduct of the managers of the Canadian Pacific Company by importing a party of Grindelwald guides large enough to keep one another in good spirits.

The result of these various impediments to climbing in the Far East has been that among the numerous visitors to India and travellers in the Himalaya, there have been many explorers but few mountain climbers. The late Mr. Andrew Wilson's charming volume, *The Abode of Snow*, was frequently spoken of by Reviewers as 'a record of spirited mountaineering.' He was in fact an invalid who only went where he could be carried. Mr. Knight's *Where Three Empires Meet* is a book of mountain travel. So is Sir Joseph Hooker's, and so, in the main, I must confess, is the present volume. The 'mountaineering expeditions' in the Himalaya up to the end of the nineteenth century might almost be counted on the fingers of one hand. The Schlagintweits' between 1854 and 1858; Mr. W. W. Graham's, in Sikkim and Kumaon, in 1883; Sir Martin Conway's, in the Karakoram, in 1892; the late Mr. Mummery's, to Nanga Parbat, in 1895 are among the most prominent. Since 1900 we have to record the visit of a mixed party to the base of K², and the persevering and successful climbs of an American couple, Dr. and Mrs. Workman, in the same district.¹

¹ See *Climbing on the Himalaya*, by Dr. N. Collie, F.R.S., one of Mr. Mummery's companions (Edinburgh: Douglas, 1902), for a succinct account of Himalayan mountaineering. The most persistent climber hitherto has been an officer in one of our Indian regiments, Major Bruce. For a full history of Himalayan exploration see the *Encyclopaedia Britannica*. I can only mention here, the Stracheys, Godwin Austen, and the surveyor W. H. Johnson.

In second-hand booksellers' catalogues, Himalayan literature consequently finds its place in the section of 'Travel' and not under the heading of high-priced 'Alpines.' In some respects, I fancy, the public has gained thereby. The specialist is often narrow in his interests; it is doubtless irritating to all but climbing enthusiasts to be led about in a new country by a guide who has no eyes for anything below the snow-level. But, on the other hand, it is but rarely that descriptions of great mountains written by men who are not familiar with the phenomena of the snow and ice region can satisfy the curiosity, or meet the requirements, either of physical geographers or of practical mountaineers. The traveller, or surveyor, who has no accurate conception in his own mind of what constitutes a glacier or a moraine does not always know one when he sees it, or how to delineate those he recognises. For instance, on the early sheets of the Government map of Sikkim (two miles to the inch), the lower part of the great Zemu Glacier, which is partially covered with rubbish, was designated a 'moraine,' and this was the only notice taken of the glaciers of Kangchenjunga.

CHAPTER II

SIKHIM AND KANGCHENJUNGA

I HAVE already indicated how my mind came to be set on seeing something of the Himalaya. It was long before the fitting opportunity arrived. But at last my turn came. In the summer of 1899 I was able to visit India and to take advantage of the offers of help I had received from various relations and acquaintances among our Indian officials by making a serious incursion into the snowy range.

My first business was to select the scene of my operations; my next to decide on a plan of campaign. My choice of Sikhim was governed by a very simple and obvious consideration. To be quite frank with the reader, though I am ready to do my humble part in investigating the laws of nature, I love 'the glories of the world' best. I have always travelled and climbed for scenery first, for science afterwards, and—let me add—for all that is included under the modern term 'records,' last. Now for what our ancestors called 'A View-hunter,' a lover of the picturesque, a mountain's height is determined by the elevation of its summit above its visible base, and not by the elevation above the sea-level which figures in atlases. The extent of the slope included in a single view materially affects, though it need not necessarily determine, the sublimity of an Alpine landscape. The quality and variety of the scenery through which the traveller approaches the snows are influenced by the number of zones of vegetation

he has to pass through in order to reach them. The Vale of the Ranjit, the visible base of Kangchenjunga as seen from Darjiling, is more than 27,000 feet below the icy crest of the great peak. From the tall Sal trees, the palms and tree ferns, the plantains, bamboo brakes and orange groves of the lower hills, the traveller climbs through innumerable changes of forest and undergrowth, past the oaks, the chestnuts, and the magnolias, past the evergreen cloud of pines and junipers, through the dense jungle of rhododendrons, to the last bare heights below the snow-level, where in spring the ground is yellow with primulas, and in autumn the brown and gold carpet of frost-bitten turf is silvered with edelweiss, and embroidered with patches of sky-blue gentians. The peaks of the Karakoram, on the other hand, though as high above the sea-level as the giants of Sikhim, stand on a lofty pedestal, itself 12,000 feet above the sea. They are therefore, to look at, 11,000 feet lower than Kangchenjunga. For climbers, they possess, I admit, some practical advantages : they have, as a rule, a drier summer climate, their approaches are less unhealthy than the deep valleys of Sikhim, and it is possible that great altitudes may be obtained more easily among them. I say 'possible,' because the range and conditions of mountain sickness are still more or less uncertain. The one fact about it which has been conclusively ascertained is that, like sea sickness, it varies with individuals. The sensations of one traveller are no guide to what another will feel (or even to what the same traveller may feel on a later occasion) in the same situation.

We are not, like the Swiss, a nation of geographers or mapmakers. I was recently asked in a literary club what and where Kangchenjunga was, whether a mountain or an island, whether in Asia or in Africa ? I am not in the least inclined to look on such lack of knowledge as culpable,

or even strange. We are all apt to be led by a misplaced modesty to fancy that the few facts that happen to be familiar to us must be matters of universal knowledge. We forget what a very insignificant portion of the field our particular knowledge covers, and consequently we show surprise when some, to us, well-known fact proves unknown to neighbours whose special interests lie elsewhere. For most of us are specialists in something, from golf or polo downwards. Fully conscious as I am of the relatively small importance attributed in our country to geographical knowledge by those who ought to be best qualified to judge—statesmen, soldiers, and the head-masters of public schools—it is with all due humility that I make the following brief explanatory statement.

It will, perhaps, be safest to let Calcutta serve as the starting-point of our travels. For most people know whereabouts Calcutta is. If the kind reader will take any general map of India and run his eye up the Bay of Bengal to its capital city, he will find at a distance of about 350 miles further north a little State pushing up like a wedge out of India into the Himalaya and separating the territories of Nepal on the west from those of Bhutan on the east. This is Sikhim. It is officially termed 'Independent Sikhim,' in order to distinguish it from the outlying territory of Darjiling, which we annexed some seventy years back.

Sikhim is not without some commercial and military importance, though these are mainly prospective. For it lies like a bridge across the zone formed by the practically independent Mongolian States of Nepal and Bhutan, and gives direct access both through the Chumbi Valley and the passes at the sources of the Teesta to Tibet and Lhasa itself.

The gate at the northern end of the bridge has been, it is true, kept resolutely closed in time of peace by the Government of Lhasa. But it could easily be forced in case of

need. It may be hoped that we may never be called on to force it. But the existence of such a gate through which an army could reach Lhasa at short notice and probably without much difficulty may conceivably be useful, if only as a check on any inconvenient development of the practice of parties of Lamas returning, on the banks of the Neva, the visits to the Forbidden Land of scientific travellers with Cossack escorts.

Into the recent history of Sikhim I will not enter here. Such information as the reader requires may be better given when we reach its capital.

Kangchenjunga is a mountain in Sikhim, according to the surveyors,¹ 28,156 feet in height, the third in height of the measured mountains on the face of the globe. It is situated about 350 miles north of Calcutta and 45 miles north of the famous hill-station of Darjiling. It has two superiors. The first is the 29,002 feet peak, known in England as 'Mount Everest,' but often called in Germany by the Indian name Gaurisankar, applied in the neighbourhood of Katmandu to the distant range seen to the east, of which it may possibly form part.² Major Waddell assures us, confirming in this respect the previous reports of Pundits, that it is known to Tibetans as Chomokankar. It lies 80 miles west of the Nepalese frontier, and is at present, owing to political reasons, inaccessible to Europeans. The second is the K² of the Survey, stated by the climbers who recently spent some weeks in its shadow to have a native

¹ According to the map attached to the *Annual Report of the Survey of India for 1901*, neither Kangchenjunga nor its Nepalese neighbour has ever been measured from any station nearer than the plains and less than 100 miles distant, so that it is possible some slight correction may have to be made in the figures.

² The peak is 110 miles distant from Katmandu, and there are intervening ranges. Some authorities assume, therefore, that it cannot be visible. But until they are in a position to tell us the height of the portion of the intervening range in the line of view, their assumption has no scientific value. Alpine peaks are often seen over intervening ranges of considerable altitude, e.g. the Oberland peaks from Monte Generoso. See Appendix D.

name, Chogori, but sometimes called, after a distinguished survey officer, 'Mount Godwin Austen,' which rises far away in the Karakoram. As I have already said, it is as far west of Kangchenjunga as the Pyrenean Mont Perdu is of the Gross Glockner in Carinthia, and it is as far north of Kangchenjunga as Mont Blanc is of Etna. My journey did not lie, therefore, as many of my friends have supposed, in the same region as Sir Martin Conway's recent explorations. It was quite at the other end of the Himalaya.

Kangchenjunga—I follow the recent practice of the Indian Government in adopting this form from among some fourteen competing variants—is the culminating summit of a group which lies partly in Sikkim and partly in Nepal, hardly touching on Tibet. It rises not, as indicated in some small atlases, on the northern, but on the western frontier of Sikkim. On the west it is completely cut off by the Kosi valley from the mountains of Nepal, and on the east by the Teesta valley from those of Tibet and Bhutan. In this respect it may be compared to the Bernese Oberland range, which is isolated by the sources of the Rhône and the Reuss. Like the Oberland, again, the Kangchenjunga group forms no part of a main watershed, and none of its glaciers drain into the Upper Brahmaputra. It is linked with the watershed only through a spur running north from a point just west of the gap known as the Jonsong La. That snowy saddle connects the glaciers at the western source of the Teesta with the northernmost branch of the great ice-stream that flows under the north-western flanks of Kangchenjunga itself and feeds the Tambur, a tributary of the Kosi, in Nepal. The traveller who crosses it may therefore make the tour of Kangchenjunga without touching any Tibetan territory, or at least any territory that is officially recognised as Tibetan. For, despite the treaties which lay down the

watershed of the Teesta as the boundary of Sikhim, the Tibetans are, during three months of the year, in effective occupation of the pastures of Lhonak. In default of any more recent information, the present political situation in that remote district is, I assume, accurately indicated in the following note in the official *Routes in Sikhim*,¹ published after my visit in December 1900 :—

‘The whole of the district drained by the Naku Chu and Langpo Chu is called Lhonak, meaning ‘the black south,’ and is regarded by the Tibetans as their own property, and they very much resent the appearance there of any foreigner.’

The Tibetans have also been allowed to establish a guard and a wall across the valley containing the eastern sources of the Teesta at Giagong (a desolate spot about the height of Mont Blanc), thus holding the southern approach to the passes. In the Alps, round Monte Rosa, a pastoral race has, in the same way, occupied the pasture region at the heads of the southern valleys. It may reassure alarmists to know that in Sikhim, as in many other mountainous regions, it is not the passes but the gorges that form the main obstacles to invaders. The connections of the upper villages on the Teesta, Lachen and Lachung, had until quite recently been with Tibet.

My object, as I have already said, was to make the tour—to use an Alpine phrase, ‘the High-level Tour’—of Kangchenjunga, passing as near the great mountain as might prove to be possible. This circuit had never been accomplished by any European. Sir Joseph Hooker came nearest to it fifty years ago. But in the map attached to his *Himalayan Journals*, a broad blank separates the

¹ The official publications of the Indian Government do not observe consistency in the spelling of Sikhim. Major Waddell says that Sikhim is correct, and I follow him, and the official *Gazetteer of Sikhim*.

traveller's routes on the north-west and north-east of Kangchenjunga. Across the empty space is printed the following stimulating sentence :—

‘ This country is said to present a very elevated, rugged tract of lofty mountains, sparingly snowed, uninhabitable by man or domestic animals.’

Maps, if caviare to the general, are, as Louis Stevenson has insisted, very suggestive to persons with proper imagination. This little map of Hooker's long retained its hold on my memory, and from time to time I felt stirred by a vague ambition to supply the missing links in the tour of Kangchenjunga. Apparently no one else, outside India, shared in this ambition. The years and the decades slipped by, half a century had been completed from the date of Sir Joseph's journey, and still no European attempted to penetrate the inhospitable wilderness at the back of the snowy range that faces Darjiling, still no even approximately correct representation of its glacial features was obtainable.

Investigation and discovery did not, it is true, stand absolutely still during this long interval. The great blank indicating the extent of the unknown country between Sir Joseph Hooker's tracks in Nepal and Sikkim had been somewhat reduced on the Sikkim side by the explorations round the sources of the tributaries of the Teesta, made in 1891 by Mr. White, the Political Officer attached to the Court of Sikkim, for many years a persevering but too reticent explorer.¹ He was accompanied by Mr. Hofmann, of the well-known Calcutta firm of photographers, who obtained admirable views of the eastern flanks of Kangchenjunga and its glaciers, and was the first to portray the northern face of Siniolchum, the most sublime of snow-peaks. The portrait has proved so attractive

¹ See *Proceedings Royal Geographical Society*, New Series, vol. xiv., 1892.

that it has been used as an illustration to two works of travel by authors who never approached the spot from which it was taken.¹ Mr. White, with his companion, penetrated to the remote monastery of Talung. Thence following a native route, they visited the Zemu Glacier, the greatest of the Kangchenjunga group. Three high grass passes brought them to the barren highlands of Lhonak, whence Mr. White crossed by a fourth pass to Giagong on the Tibetan frontier. Mr. Hofmann, to whom we owe the only account of the expedition, did not go further than the Zemu Glacier.

The next advance was made by Major O'Connor in 1897, when he penetrated Lhonak from the east. Crossing the Chortenima La, a pass at its head, that leads directly into Tibet, he returned through the Forbidden Land without apparently encountering any obstacle, and re-entered Sikhim by the Kongra Lama La, which is in the immediate neighbourhood of Hooker's Donkhyia Pass. His journey has been briefly recorded in the official *Routes in Sikhim*, an excellent compilation issued under his editorship in 1900, after my visit to the country.

In 1902 Mr. White, presumably by the order of the Viceroy, and for purposes of further delimitation, again visited Lhonak at the head of a large party. As has previously been the case with this traveller, who was furnished with instruments by the Royal Geographical Society, no account of his journey has reached the public eye, but he has sent an original map of the frontier district to the Society, and has placed on sale in London some new and interesting photographs. From these materials it is clear that he went up the Langpo Chu to the Chortenima La, and subsequently explored the passes under Chomiomo

¹ Major Waddell's *Among the Himalayas*, Chandra Das's *Journey to Lhasa* (R.G.S. edition, annotated by Mr. Rockhill).

and the glaciers about Giagong. His map, which is a valuable document, has been reproduced by the Survey Department in Calcutta, but it is to be noted that the Department in a printed note disclaims any responsibility for its contents. The critic at a distance cannot but feel some surprise that the Government did not think it worth while to send a surveyor whose work they could accept and endorse on so interesting a trip.

Turning to the south of Kangchenjunga, Mr. Robert, a surveyor, produced, in 1881-83, a sketch of the country on the Sikhim side of the ridge of the Kang La. His work was highly spoken of by his superiors at the time, and, as far as Sikhim is concerned, no doubt justly. But with regard to all the topography between the Kang La crest and the Yalung Valley the details introduced are entirely hypothetical and generally wrong. Sir Joseph Hooker's small map comes much nearer the reality. Mr. Robert was also employed a little later in completing, in the lower part of the Lhonak Valley, the work of Captain Harman, who had died at Florence from the effects of frostbite contracted while surveying on the heights near the Donkhyia Pass. Mr. Robert's mission had one very curious result. It is impossible to say whether he or the late Colonel Tanner was mainly responsible for the curious string of mis-statements which appeared in the *Survey Reports* for 1883-84. The fairest way to deal with the passage is to quote it entire.

‘Mr. Robert has brought back the unlooked-for intelligence that to the north-west of Kangchenjunga, that is on the shady side of peaks and ridges which vary from 23,000 to 28,000 feet, and which are nowhere under 20,000 feet, there is not a single glacier. Masses of glacier ice and névé skirt the lower slopes, but in none of the valleys does the ice flow away to any distance from the immediate foot of the mountains. Hooker's picture of Kangchenjunga

shows an insignificant glacier which extends for a short distance from that peak, but as a rule the whole of the enormous mass of snow which is deposited on the slopes of the Kangchenjunga group is either evaporated where it falls, or else is melted and carried off by the Lachen and other feeders of the Teesta without having first passed into the state of glacier ice. In clear weather small glaciers may be seen from Darjiling at the foot of Kubroo, and I have noticed a great extent of glacier ice between Kubroo and Jannoo, but it hardly reaches the valleys. In fact, Kangchenjunga may be said to have no glacier worthy of the name, and certainly none half the size of those given off by a Gilgit mountain of the comparatively low altitude of 18,000 feet. A very few days ago I was looking straight up a valley to the very base of Mount Everest, and there also I could not detect glaciers of any noteworthy size. Along the Nepal snowy ranges, for a hundred and fifty miles west of Everest I have closely examined the valleys with rather high telescopic power, and, except on the lower slopes, I can discover no glaciers.'

The one grain of fact that underlies this pile of confused and inexact statements is that in this part of the Himalaya the lower trunk glaciers are so thickly covered with moraine matter that they are hardly recognisable as glaciers at telescopic distances.

British officials had explored, and, to some extent, mapped—though the sheet covering the ground north-east of Kangchenjunga left much to be desired—all the territory within the limits of Independent Sikhim. But the Nepalese flank of Kangchenjunga was still, during the second half of the nineteenth century, regarded as a region closed to European visitors. Even so energetic a traveller as Major Waddell was unwilling to risk the consequences, naturally serious in the case of a responsible official, of

collision or arrest. Into all such regions the Indian Survey is in the habit of sending native surveyors—Pundits they are called—to explore. Two of these men, both now living, and both resident at Darjiling at the date of my visit, claim to have traversed the gap left by Hooker.

With regard to the first, the well-known Sarat Chandra Das, a full account of whose journey to Lhasa in 1881 was printed as a Survey Report, and has recently been published (1902) by the Royal Geographical Society, I permit myself to doubt whether the pass he traversed on his earlier visit in 1879 to Tashilumpo in Tibet¹ was identical with our Jonsong La. It is true that he now asserts its identity with that pass. But in his original printed narrative he called his pass the Chathang La, and a pass connecting two of the head-waters of the Kosi is indicated on maps west of the Jonsong La under the name of the '*Chabok La*.' It is to be noted that Sarat Chandra Das seems not to have applied to his pass the name Jonsong La until after one of his native colleagues in the Survey had crossed the latter pass (La means 'pass'). Chandra Das's published sketch-map is, unfortunately, in some parts too vague, in others too inaccurate, to be intelligible. But the details of his narrative, if any trust is to be placed in his compass and the direction he assigns to the surrounding ranges, furnish conclusive evidence that his pass and ours were not the same. It is further to be noted that the late Colonel Tanner tells us that the Pundit's observations place his pass considerably west of the Jonsong La (*Survey Report*, 1883-84, page 7). Colonel Tanner concludes that the Babu's observations were at fault. But it is surely at least as plausible to suppose that the identification of Chandra Das's pass with the Jonsong La was erroneous. There is, however, I think, no

¹ See Appendix C.

doubt that the 'Chortenima La' crossed by Chandra Das was the pass known by that name in the country. The sketch he gives of the strange crags on the top corresponds very fairly with Mr. White's photograph taken in 1892.

I must guard myself against the supposition that in the foregoing remarks I desire in any way to take away from the credit justly earned by Chandra Das as an energetic traveller and intelligent general observer. For an Indian born on the shores of the Bay of Bengal to face successfully so many perils by snows and by strange and rude people was a marvellous feat in which the question whether he crossed one high pass or another makes not the smallest difference. Chandra Das had had no training in surveying, of which we are told his companion, Ugyen Gyatsho, was also 'at that time ignorant' (*Report*, 1884-85, page 11) and in the *Report* for 1883-84, page 30, Colonel Tanner tells us, 'It is owing to an error made in the position of this (Jonsong La) pass by the rough exploration of the Lama and Babu Sarat Chandra Das, some years ago, that the whole of the topography, or rather geography, of the north of Kangchenjunga has been so much distorted on the last published map.' These references may serve to show that in my criticisms of Chandra Das's cartographic performances I do not speak without high official authority.

With regard to the second Pundit, Rinsing, there is, in my mind, despite his curious behaviour when travelling with us, little, if any, doubt that he crossed the same pass we did. This was a most remarkable feat for a native, even for a Bhutia, particularly when the late season of the year—December—is taken into account. Rinsing lost two coolies, apparently from exhaustion, during his descent, and his provisions gave out. But he deserves very great credit for getting his party over at all what he described at the time, probably with justice, as the loftiest and most

difficult pass in this part of the Himalaya, and referred to, more poetically, in a memorial he presented to me on our return to Darjiling, as 'the Jaws of Death.'

In adopting here the word 'difficult' I ought perhaps, in order to prevent future misunderstanding, to explain that I use it in the popular, and not in a climber's sense. Many travellers call any path where they cannot ride difficult; in the Alpine Club we are accustomed to restrict the term to places where an active man is in some danger of tumbling. There are none such on the Jonsong La, though there is plenty of scrambling over rough ground, and there may be risk at times from falling stones or bad weather. Allowing for the difference of scale in the two ranges, the Alpine pass to which it may most fairly be compared is the well-known Strahleck, between Grindelwald and the Grimsel.

Rinsing's journey was characterised by the then Head of the Survey in the following justly appreciative terms:—

'Our knowledge of the hitherto sealed region north of Kangchenjunga has been considerably extended by the explorations of R. N. (Rinsing) during the year under report (1884). After suffering great hardships and losing two men from excessive cold and fatigue, he completed the very arduous undertaking of a circuit round Kangchenjunga, and we now have not only a sketch of the whole of that great mountain and the spur and valleys that emanate from it, but also a delineation, *for the first time*, of the boundary between North-eastern Nepal and Tibet. R. N.'s sketch is a continuation of Mr. Robert's work in North Sikkim and north-eastwards of Hooker's in Eastern Nepal. . . . Rinsing also completed the sketch of the Zemu river and rectified some names which had been erroneously accepted before: he crossed from the drainage of the Tambur river into that of the Teesta by the

Jonsong La pass, which the Lama (Ugyen Gyatsho, Chandra Das's companion in 1879), who had previously ascended it, stated to be the highest pass he had ever encountered. The explorer met with many glaciers in the northern valleys, and this contradicts the statement as to the non-existence of these glaciers made in Colonel Tanner's report of last year, which was evidently based on erroneous information.'

It is to this journey of Rinsing, to which I was the first in this country to call public attention, that, as the present Surveyor-General, Colonel Gore, informs me, Indian geographers and cartographers have been indebted for such knowledge as they possess of the north-western slope of Kangchenjunga. The information Rinsing brought back was embodied in a sketch-map, with a manuscript copy of which the Surveyor-General has kindly furnished me.

On this sheet the general trend of the valleys is (with a few exceptions) correctly laid down. But the indications of glacial features are, as a mountaineer may see at a glance, incomplete and somewhat grotesque. On looking more closely he will appreciate that Rinsing has made some endeavour to represent trunk ice-streams. A few wormlike marks in the heads of the valleys bear the same relation to glaciers that the caterpillars of our old school atlases did to mountain ranges. They stop short miles above the tongues of the existing glaciers; and where these lie the word 'moraine' is printed. Yet more curious is the insertion in the place of névés of running streams of water descending from the highest ridges.

Having during our tour had frequent opportunities of seeing the Surveyor at work, I am disposed to attribute some of the defects of his survey to his obvious pre-dilection for sitting in a snug tent and filling in neat but

somewhat subjective detail. Scrambling with his plane-table among rough ice and moraines, and out-of-door sketching were far less to his taste. But what may seem to a European Rinsing's apparent want of method is not, I think, altogether without a purpose. The term glacier, in the mind of an Indian cartographer, denotes *bare ice*. The upper névés which still show a snowy surface; the lower tongue, which is more or less hidden under piles of rubbish, he consequently ignores. I need not say that maps constructed on such a system are valueless to the physical student who wishes to appreciate the extent of Himalayan ice-fields and to compare their dimensions with those of the glaciers of other ranges.¹

The Surveyor-General's statement in the *Report* for 1883-84 that, 'except a small, three-cornered bit, north-west of Kangchenjunga, we have a map of the whole of the great spur and snow-fields that compose the group of that name,' must obviously not be taken in the sense in which it would be naturally understood by critics or students accustomed to European methods of depicting a snowy

¹ The heights given on official maps and publications appear to be divisible into three classes:—

1. Peaks included in the Great Trigonometrical Survey of India, the heights assigned to which have never varied.

2. Lesser summits, particularly those in the chain north of Kangchenjunga, trigonometrically measured by the Sikkim Survey party. Many of these altitudes have been revised, some increased, others diminished, not, Colonel Gore informs me, as the result of fresh observations, but after a recalculation in the office.

3. Miscellaneous heights of passes and places, probably derived from various sources, pundits' or travellers' notes. I give examples of some of the more notable variations: Yumtso La; Transfrontier map, 17,040; Skeleton map, 15,800. Thangchung La; Revised Transfrontier, 17,100; Skeleton map, 1896, 17,840; 1900, 17,340 (misprint?). Thé La; Revised Transfrontier, 17,430; Skeleton, 1892 and 1894, 17,810; ditto, 1900, 16,575; and White's map, 1903, 17,810. Tebli; Skeleton, 1892, 15,600; ditto, 1900, 14,500; White's map, 16,345. And last our Jonsong La; Sikkim Gazetteer, 1894, 22,300; Revised Transfrontier, 22,000; Skeleton map, 1894, 22,000; Colonel Tanner, 1886, 19,000 to 20,000; Rinsing, 21,500. On Professor Garwood's map I have inserted the official triangulations in thick type, Professor Garwood's heights in thin sloping type, and a few heights from miscellaneous sources in brackets.

range. To get round Kangchenjunga was not, therefore, the only object I set before me. I hoped also to be able to obtain, what the Indian Survey had been too fully employed elsewhere to be able to give geographers, a fairly accurate general delineation of the main glacial features of the group, and some material for comparing them with those of the Alps and the Caucasus. I trusted to be able to ascertain the number and length of the trunk ice-streams, to form an approximate estimate of the amount of ground covered by snow and ice, and to recognise any peculiarities that might distinguish the glaciers of Sikkim from those of more temperate regions.

The field and object of my explorations decided, my next care was to secure suitable companions. In my friend Edmund Garwood I found an Alpine climber who had studied the art of travel with Sir Martin Conway in Spitsbergen, had some practice in plane-table surveying, and was also a Professor of Geology and a competent photographer. Signor Vittorio Sella has been known throughout Europe for many years as one of the first of mountain photographers. In the Caucasus and Alaska he had been singularly successful, both with telephotographic plates and in mountain panoramas taken from great heights. I thought myself fortunate, therefore, when he agreed to the conditions on which I proposed he should join my party. At his particular request I agreed to his bringing his brother, Signor Erminio Sella, to keep him company. Signor V. Sella kindly engaged for me a young Val Tournanche guide, Angelo Maquignaz, one of the family whose name is intimately associated with the Matterhorn. He also brought with him as a photographic assistant, a Piedmontese, named Botta.

We sailed, a party of six Europeans, from Marseilles on August 10, 1899.

CHAPTER III

DARJILING

DARJILING, the hill-station of Bengal, is now only twenty hours by rail from Calcutta, the capital. Anglo-Indians, with the fine contempt for railroad journeys that distinguishes those who inhabit countries of great distances, think nothing of running up there for a 'week-end.' Young ladies, reinvigorated by mountain air, but bored by mountain scenery, readily fly down to a ball at Government House and fly back to acquire a fresh store of health and energy. The open cars of the little toy train that climbs up from the steaming plains of the Terai, carry daily their freight of health-seekers from the moist heat and mouldy palaces on the banks of the Hooghly to the fresh air of 7000 feet, and the bright villas and gardens of the hill-station. 'Those of active mind,' writes Sir Joseph Hooker, 'invariably thoroughly enjoy their stay, while the mere sportsman or lounger mopes.' This trenchant generalisation still, I think, holds good, though the social resources of the town, its clubs and lawn-tennis grounds, have naturally grown during the last fifty years, and even a 'lounger' may now find existence tolerable.

The journey from Calcutta to Darjiling is a little shorter than that from London to Luzern. Starting in the afternoon, the traveller dines pleasantly enough on the deck of the little steamer that carries him across the Ganges, and then settles down for the night in his comfortable com-

partment. Let him, if the skies are clear, endeavour to be awake at earliest dawn. For with luck he may see a vision. As he looks out of the carriage window, he will at first observe only the dark plain and the dim shadowy rounded outlines of the foothills. But when he lifts his eyes he will be aware, if he lifts them high enough, far up, at an incredible height in the pale tremulous sky, of a row of roseate flames. They are not clouds. While he gazes they harden from the phantoms of a dream into definite forms. They are the snow-peaks of Sikkim, the giants of the Himalaya, the greatest mountains in the world, kindling with the remote dawn, and flinging back its flames to mortals. The vision is brief, but like the view of the Alps from the Jura, it is one of those that can never be forgotten.

Some four miles short of the hills, which rise out of the plains as abruptly as the Lombard Alps, the train stops at a station called Siliguri, and its travellers are transferred to the tiny cars of the mountain line. Leaving behind the watery flat and the open country, the rails soon begin to climb a narrow track cut in the dense vegetation of the foothills, a mere rift half buried under the shade of the primæval tropical forest. At night the down mail—it is sometimes late—is lit only by torches fixed on the engine, which dashes through the leafy darkness, throwing a weird gleam on the tall pale trunks of the tiger-haunted jungle.

After many windings the line emerges on sunny slopes, recently stripped of their natural covering in order to make room for tea-gardens. Alternately leaping ravines cloven by the perpetual waterfalls which foam in their depths, and passing under the verandahs or through the backyards of neat bungalows, it gradually leaves the hot, simmering plains far below, and climbs through the mists and showers of a chillier air by a series of ingeniously contrived loops and zigzags, resembling those of an old Alpine

carriage road rather than the bolder expedients of more modern mountain railways. At last it reaches a saddle (7400 feet above sea-level) in the low outer range that runs roughly parallel to the Himalayan snows. This great ascent, more than equivalent to that from Mendrisio to the top of Monte Generoso, is made without any expensive or conspicuous feats of engineering skill. Arrived on the crest the train runs downhill (600 feet) for two miles along the western side of the steep spur on which Darjiling is perched, before it comes to a stop on a slope covered with large public edifices, barracks and hospitals, garden-girt villas and zinc-roofed bungalows.

The first impression that the traveller fresh from the lower world receives on his arrival at Darjiling is the shock of entire novelty, the consciousness of having entered a new country, and fallen among another branch of the human race. India with its climate, its scenery, its architecture, and its sad, limp inhabitants, is lost to view. Yesterday was spent in rushing across the interminable plains of Bengal, among rice-fields, pools full of water-lilies, and high-roofed wooden dwellings raised on piles ; to-day no natural level large enough to build a house on is in sight. The near landscape is crumpled into spurs and chines, a maze of gigantic ridges and furrows. Its features are sub-alpine, akin to those of the Italian Alps ; the climate is Scottish, that of the Western Highlands, when the weather is soft ; the architecture—well, let us say, the suburbanesque variety of Early Victorian modified by local conditions.

Let the reader imagine Malvern spread along the crest of Monte Generoso, and he may perhaps form some idea of the first aspect on a misty day of the famous hill-station. A large town has grown, as well as the ground allowed, along a narrow mountain top. Since Sir Joseph Hooker lived here fifty years ago, Darjiling must have developed

almost as much as Cannes has in the same period. The town, that is, the maze of villas and gardens interspersed with churches and convents, schools and hospitals, clubs and stores, has spread on both sides of a thin hogsback between two deep valleys, the bottom of one of which lies 6000 feet below, almost as far as the Lake of Como is below the ridges of the Grigna. A broad esplanade, the only carriage road in the place, skirts the lower end of the spur, and descends to the suburb of Lebong and its barracks. In the immediate vicinity the beautiful primæval forest has been cleared away, and the slopes are now tea-gardens, as little picturesque as Rhine vineyards. The surroundings are those of civilisation, and the internal aspect of the town might be held commonplace, were fresh flowers, turf, and tidiness ever commonplace in the Far East. To the new arrival from the plains this air of tidiness, almost smartness, is delightful; even the hotels look habitable and homelike compared to the slovenly receptacles that are still thought good enough for globe-trotters in many of the great towns of India.

The villas are for the most part connected by bridle-paths—terraces or zigzags according to their relation to the main slope, which is so steep that the chimneys of one row of houses are usually on a level with the ground floors of the next. There are no carriages in the lanes. Their place is taken by dandies in which British babies out for an airing, or sociable ladies bent on afternoon teaparties are trotted about by four runners, broad-faced Mongolians clad in steeple-shaped hats and fantastically bright liveries, with long pig-tails dancing down their backs, who give the brilliancy of a scene in a Savoy burlesque to the unfinished rows of shops and bazaars. 'Row' is the better word—there is nothing in Darjiling that quite comes up to the European idea of a street.

At every turn we meet with a contrast. At the first corner we may encounter a portly Anglican prelate astride a most inadequate hill-pony, at the next a party of Buddhist priests, Lamas clad in yellow togas and crowned by red mitres, twirling their prayer-wheels. Most numerous among the throng are the Lepcha labourers from the tea-gardens, men with long black hair tied up in a pig-tail, and melancholy, effeminate faces, clad in linen shirts and striped blue and white kilts. Close at hand are a group of stalwart, clumsy Bhutias, 'smouchy Tartars'—I cannot resist Charles Lamb's epithet—with good-humoured faces, high cheek-bones, and small, twinkling eyes. Their women, broadly built, with complexions that mingle pink and yellow like a ripe apple, carry their fortunes about with them, decorating their substantial persons with masses of silver and turquoise jewellery, heavy earrings, chains, belts, and amulets. The type is very Mongolian, almost Arctic; the Tibetan looks as if, like his glaciers, he were a survival from an ice age. Now one is accosted by a pedlar, presumably from Lhasa, with a stock of doubtful curios—mandarins' hats, Lepcha knives, and Buddhist amulets; now by a butterfly-catcher from Nepal, or an orchid-collector from the forests beyond Pamionchi. Through the motley crowd strides the bronzed English officer, the master of the show, engaged in collecting recruits for his Gurkha regiment, familiar with all the dialects of the hill-tribes, and astonishing the Nepalese tribesmen by recognising from their speech the particular district to which each belongs.

With the two races I have just mentioned, the Lepchas and the Bhutias, the reader of the following pages will find himself constantly brought into contact. I pause therefore for a moment in order to give a summary description of their history and character. The ethnologist who seeks for fuller details I must refer to the works of Sir Joseph

Hooker and Major Waddell. It would be difficult to add anything to the excellent and sympathetic account recently furnished by the latter author, whose close study of the country, its people, their languages and religions, gives exceptional authority to all he writes on these topics.

The Lepchas are the aborigines of the Sikkim valleys. They possessed the land from time immemorial until three hundred years ago. Ethnologists tell us that they are Mongolian, but their closer affinities lie with other primitive hill-tribes rather than with the coarser modern Tibetan stock. Children of the forest, true Arcadians, they live, not in villages, but in separate clearings, sunny plots of maize, barley, and millet, surrounded by groves of orange-trees and plantains and clumps of enormous bamboos. Their dwellings are square wooden huts, raised on platforms for protection from snakes and wild beasts, and covered with thatched roofs that project to form rude verandahs, where the golden pods of maize are, as in the Italian Alps, frequently hung out to dry. Their great resource and material for all purposes, from houses and bridges down to mats and drinking-cups, is the bamboo. Of ornaments of all kinds, particularly silver chains, beads, necklaces, and amulets, they are very fond. The sexes are often indistinguishable at first sight. Men and women dress alike in a loose shirt and striped kilt or petticoat, both part their hair in the middle, wearing it, the men in one, the women in two, pigtails. 'If'—I quote Sir Joseph Hooker—'they serve a good hillsman like themselves, they will follow him with alacrity, sleep on the cold, bleak mountain, exposed to the pitiless rain, without a murmur; lay down their heavy burden to carry their master over a stream, or give him a helping hand up a rock or precipice.' Most of their paths are ladders or precipices, and steepness seems a matter of indifference to their abnormally developed muscles and

hardened limbs. Yet the outward form of the race is effeminate. Their gentle demeanour and kindly manners at once strike the traveller, and his first impression generally holds good when he comes to know them, though their childishness has also its provoking side.

Many individuals have an expression which is pathetic and affecting ; their eyes seem to have seen all the mysteries of the woods. One is hardly surprised to learn that, rude and primitive as their life is, they have a poetry of their own. The straight knife they wear serves for all purposes —except offence ; with the bows and arrows, which are their only weapon, they often carry a long bamboo flute, to which they chant soft lingering songs. Met by chance in the woodland tracks the Lepcha seems a figure wandered out of an earlier world, where men were more closely allied to nature. Naturalists by inherited experience, a race of Mowglis, they know and have named every beast and bird, and can draw them out of the wood at will by mimicking their songs and cries. They have discovered also the qualities of the plants of the wilderness, knowledge they have lately learned to turn to account for the benefit of European collectors.

Their religion is a simple form of nature-worship. An imaginative race, the hills and groves and streams are for them haunted by a crowd of spirits, friendly or mischievous, concerning whom they will tell endless legends round the camp-fire. These beings have to be propitiated, particularly the malicious ones, by offerings. According to Major Waddell, they acknowledge in their songs the existence of an 'All-Father-Spirit who made the earth.'

Nearly three hundred years ago religious dissensions among the Buddhist monks north of the Himalaya, the Yellow Caps and Red Caps of Tibet, resulted (according to the legend) in an invasion of Sikkim by three Lamas. These



LEPCHAS.

holy men met at Yoksun, the highest village towards Kangchenjunga on the south, converted the country, and set up one of their own fellow-countrymen as its ruler. From this time the Bhutia, that is the Tibetan emigrant, has been master in Sikkim, and the Lepcha has in many cases become practically his serf. The Bhutia Kazi, or local chief, exacts feudal services, or rent, from his villagers: in the case of a coolie who died on our journey, Rinsing, our Bhutia guide, demanded compensation for the loss of one 'of his men.'

These Bhutias, Tibetans who in times past have come south and settled either in Nepal or Sikkim, are as a rule, where the race is not mixed, regular Tartars with high cheekbones and small, twinkling eyes. Their broad faces wear a habitual air of jollity, but they are great comedians and masters of the most varied expression. One of our men frequently reminded me of the late Mr. Buckstone in *Tony Lumpkin*. They are sturdy in build, noisy in manner and turbulent in spirit, but, so far as my experience goes, not ill-conditioned when properly handled. Far more energetic than the Lepcha, they are supplanting the weaker race.

Their women are thickly built and comely only in early youth, but none the less given to personal decoration. They wear prodigious earrings and delight to cover their broad bosoms with silver and amber ornaments. In the intervals of other occupation they are generally spinning.

The hills are dotted with Gumpas or monasteries where Lamas or monks, not less idle than those of the west, preach and practise a degraded Buddhism, in which demon-worship is the most prominent feature. Their craft consists in an elaborate system of charms and devices by which the machinations of the monsters, whose terrific

figures—drawn with a grotesque force that does the native artists credit—adorn every temple, may be defeated, and the Lamasery enriched.

In the Darjiling District and Lower Sikhim the majority of the population are Nepalese, known as Pahariyas or Highlanders, who use dialects which are varieties of Hindu, and are all Hindus by religion. They are prominent in the Bazaar at Darjiling, but figure only in the background of a mountaineer's recollections, and need not therefore be described at any length here.

On our arrival, mists and frequent showers shrouded the mountains, and forced on our attention the nearer features of the town and its surroundings. The centre of Darjiling is Observatory Hill, a knoll on the crest of the ridge, held sacred by the native inhabitants and crowned by a Chait or Buddhist cenotaph, and many poles profusely decorated with prayer-flags. Seated on the level platform which surrounds the monument, the visitor sees the white edifices and houses of the town scattered round him in a wide circle on both sides of the hill and on the minor spurs that protrude from it. Behind and above him on the ridge are the now deserted barracks of Jallapahar, where the British private, in the days before football had been introduced into the army, used to commit suicide from sheer boredom with scenery. Below, almost at his feet, lies 'The Shrubbery,' the Lieutenant-Governor of Bengal's beautiful house and garden. The business quarter spreads itself in a hollow on the western slope round the native bazaar and hospital. The steeper eastern slope facing the deep valley of the Ranjit is dotted with nestlike dwellings planted in romantic sites, looking more fitted for swallows' nests than human homes. We admired their builders' ingenuity, little thinking that on our return we should scarcely be able to trace the scattered

foundations of some that now hung in a niche in the ravine at our feet.

During our first stay of four days at Darjiling, the veil was never lifted from the face of the snows. Let me, however, lift it for my reader, instead of making him wait, as we had to wait, until our return six weeks later. Let me recall the prospect seen on clear October mornings from the benches on Observatory Hill. A gay foreground is made to the wide landscape by the tall poles hung with strings of many-coloured little prayer-flags, blown out by the breezes which are supposed to carry their petitions to whatever quarter they may be addressed. The central and most conspicuous object on the distant skyline is the nobly composed group of snowy summits of which the long crest of Kangchenjunga forms the centre and crown. Between the green depths, 6000 feet below our lofty perch, where the waters of the Ranjit reflect the sunshine, and the granite walls and icy staircases of the great heights, the space—some forty-five miles—is filled by a crowd, six or seven ranges, of soft rounded hills drawn up in processional lines that run parallel to the snows. Their horizontal ridges are for the most part lower than the brow on which we stand, so that the eyes sweep easily over them and plunge into the intervening hollows, bowls of eternal verdure, filled with translucent, vaporous air. Their steep sides, rarely broken by crags, are clothed to the summit in forest or cultivation. Here and there terraced rice-fields show as bright green patches, or a pale yellow track unfolds itself like a ribbon down the long hillside. But the scarce hamlets and scattered farms make hardly any show in the landscape: the country looks homely and cultivable, but little inhabited. The only landmarks, and they have to be looked for, are the white specks which mark the lofty sites of Buddhist monasteries.

But the gaze of the mountaineer soon returns to the snows. The picture, so long dreamt of, so often studied in black and white, is at last before his eyes in all its glory of colour and aerial perspective. A certain complacency perhaps mingles with his admiration. For we all have our vanities, and the mountaineer's is to cherish a serene conviction that he alone can properly understand and appreciate the divine architecture. Of course his claim is in a strict sense preposterous. A distant view of a snowy range—the view of the Alps from the Jura is the classic example—has a strange power of moving all poets and persons of imagination. What his technical knowledge does for the mountaineer is to lift him for the moment to this upper level of intelligence. He knows by experience what the few discover by intuition, and the many never discover at all, the remoteness and the gigantic dimensions of the natural objects brought within his range of vision.

On the average man the sense of size is apt to be lost where everything is on so vast a scale. The typical tourist in the Alps proposes as a morning walk to follow the skyline from the St. Theodul to Monte Rosa, or mistakes the Grands Mulets for a party ascending Mont Blanc. The lowlander has to live some time at Darjiling before the full meaning and magnitude of the view impress themselves on his unpractised senses. He has to be told that the black rock thrown out against the lower level of the snow (Kabur, 15,830 feet) marks the height at which Mont Blanc would appear. From the Vale of the Ranjit at our feet up to Kabur is a rise of almost 15,000 feet; from Kabur to the top of Kangchenjunga there is a rise of over 12,000 feet more, 27,000 feet in all!

Kangchenjunga, the centre of the picture, is not a peak, but a screen-shaped mountain, resembling Monte

Rosa as seen from the Italian Lakes. The icy ridges that form its skyline are of immense length : they rise towards the centre in graceful curves, and culminate in two rocky pinnacles, connected by a short comb.¹ The face turned towards the spectator is a gigantic range of cliffs, broken only by narrow shelves of ice, and supported by two vast buttresses which, in the early morning, throw clear-cut shadows across the snows. A tier of horseshoe precipice marks the starting-point of the crest that connects the mountain with Kabru (24,015 feet). That conspicuous and easily recognisable mass has some resemblance to an enormously magnified Tödi. Its top is a broad bank of snow, connecting two blunt summits. From the crest masses of névé tumble to form precipitous glaciers on the lower slopes. In some lights a dome and a pyramid, their outlines merged in that of the greater peak, can be distinguished standing out in front of it, much as the Aiguille and Dôme du Goûter stand out from Mont Blanc in the view from Sallanches.

Beyond and behind Kabru to the west rises Jannu, the rock peak of the group, a great round tower crowning the end of a bastion of crags. The outline may suggest a sphynx, or a lion couchant. Too steep to hold snow except on its ledges and shoulders, it is to the critical appreciation of a connoisseur in mountain forms a most attractive monster. Over the outliers of Jannu, Hooker's Nango, the snowy peak in Nepal that shuts out the sunset from the vale of Kangbachen, is just visible.

On the other side, to the east, Kangchenjunga is supported by Pandim (22,020 feet), a tall cupola precipitous on the south, and at a greater distance, by Narsing (19,150

¹ In the centre of this comb is a projecting tooth which might be reckoned as a third or Central Peak. It is probably somewhat higher than the eastern summit. I have not counted it as a separate peak.

feet), a far less formidable summit which ought to prove a comparatively easy prey to skilled climbers. Dwarfed by Kangchenjunga, and masked to some extent by the nearer spurs, the white peak of Siniolchum (22,570 feet) is from here comparatively ineffective.

The mountaineer hardly needs field-glasses to convince him that in general characteristics, in névés and hanging glaciers, in crevasses and moraines, the mountains before him resemble the snowy ranges of Europe. Whatever varieties there may be in detail or in scale, the essential features are the same, snow falls on the top of Kangchenjunga, névés are formed within a few hundred feet of its loftiest ridges, glaciers of every type known in the Alps drape its slopes.

I have heard it said by travellers that Darjiling is 'not as grand as Zermatt.' The comparison is singularly inept and misleading. For an Alpine parallel to the Himalayan landscape one must go to Monte Generoso or to the Rigi, to a spot outside the snowy chain, on its skirts and not in its heart. The view from Darjiling reminded me most of that from Monte Generoso. The distance of the great peaks from the spectator (45 to 50 miles) is almost identical: in both views the foreground is an abyss, the middle distance a labyrinth of green hills. And as on Generoso the traveller turns at last from Monte Rosa to recognise with interest on the northern horizon the icy spires of the Oberland, so from Darjiling he looks away from Kangchenjunga to Chomiomo and Chumalhari on the borders of Tibet. To make the comparison complete, however, he must ride up to the neighbouring eminence of Senchal. For Darjiling, lying within, that is north of the outermost fold of the foothills, gets but a glimpse of the plains through the gap where the Teesta breaks its way out of the mountains. And on the west, the Nepalese

KABRI

JANNU

KANGCHI NUNGA

PANDIM

UBUNU

30



snows are hidden by the long and tame outline of the Singalela spur, which runs south from Kangchenjunga and forms the limit of the basin of the Teesta. The panorama from Darjiling is in fact a panorama of the region watered by that river and its tributaries, of the native State of Sikkim.

I have endeavoured to describe the form and limits, the topographical detail of this marvellous landscape, to write, as it were, a key to the well-known photographs. But how little idea can any black and white photograph, or any printed page, give of the sublime spectacle which was displayed every day during my second sojourn at Darjiling to the generally solitary watcher under the flag-staffs on Observatory Hill.

Even at a distance of from 40 to 50 miles the Kangchenjunga Group is great enough to be majestic in form and bold in outline. But in such wide prospects colour and movement are often even more important elements than form. The variety of expression in the vast landscape was extraordinary. At dawn the lower mountains shone, indistinct in detail, through a veil of amethystine vapour: the damp air converted the naturally green hills of the middle distance into blocks of blue or mauve colour, recalling the background of an old Venetian picture. Soon the sun's shafts, darting into the thousand hollows that lie between the snows and Darjiling, drew the warm, moist air out of their depths in transparent waves. These, as they rose into a colder atmosphere, were condensed and transformed into tall, luminous, sharp-edged columns of cloud, which rose vertically, until, caught by some upper current, they bent and broadened at the top, and finally broke up into detached fragments, which floated away slowly northwards to lodge in the hollows of the snows during the hours of noontide heat. Meantime

less adventurous cloudlets loitered among the ridges which break down one beyond the other to the lowlands of Kuch Behar, or hung motionless—bright bars throwing pale shadows across the amber patch of plain, visible where the Teesta breaks through a deep gate in the outermost range of foothills.

So the day passed on, each hour bringing out some new feature and fresh charm in the landscape, to its crowning glory, when far above the twinkling lamps of the town and the deep twilight of the underworld, high over the deathly pallor of the lower snows, the cloak of golden mists parted and left bare the broad bright shoulders of Kangchenjunga, while the brow of the great mountain was illuminated by the last glow of the departing day, a rose deeper and ruddier and more 'awful' than the sunset glow of the Alps, at the moment an almost unbelievable vision, and for ever after an enduring memory.

CHAPTER IV

THE FOOTHILLS

ADDISON, when he visited Bern, was content with a distant view of the Oberland peaks, which, with a literary Englishman's contempt for exact geography, he called 'the mountains of the Grisons.' Gibbon at Lausanne was quite satisfied to send off any of his friends who desired 'to visit the glaciers of Savoy' with his major-domo as escort. It never seems to have occurred to either of these incurious citizens to venture himself beyond his terrace or his arbour. The dwellers at Darjiling have perhaps better excuse if they do no more, as a rule, than ride to Senchal, or Sandakphu, on the Nepalese frontier, for a glimpse of the highest mountain in the world. The local authorities, it is true, publish for the use of travellers a long list of Bungalows or Resthouses, of tariffs, distances, and practicable routes. But difficulties of transport arising from the state of the paths and bridges in Independent Sikkim, and the consequent cost of portage on any journey beyond the few horse-tracks, coupled with the dread of fevers, leeches, and such-like pests, keep back tourists, while the comparative lack of game discourages the sportsman. There is another obstacle to be reckoned with, the absolute refusal of the Nepalese Government to allow Europeans to travel in Nepal, except under special conditions and within a few miles of the capital, Katmandu.

This prohibition naturally weighed on my mind as a

serious impediment to the execution of my plan for going round Kangchenjunga. Indeed, seeing that during nearly half the circuit of the mountain our route must lie in Nepal, it might have been held a fatal impediment. But 'where there's a will there's a way'; and there seemed to me a way of evading the difficulty. Many travellers had been turned back from the frontier south of Kangchenjunga. But none had yet attempted to cross it in the wilderness to the north, the No-Man's Land towards Tibet described by Sir J. Hooker. I was convinced that if we could once get fairly into Nepal from this direction we should have two chances. It was possible that we might find a practicable route over the glaciers above all the villages and haunts of men. If, as was much more likely, we had to descend to inhabited places, we could truthfully represent that our only desire was to return to British territory by the shortest route, and it would hardly be likely to occur to any Nepalese officials we might meet to do anything to thwart that desire—they would rather be likely to assist us in completing our programme by escorting us to one of the Singalela Passes.

Having come to the decision to set out by the eastern flanks of Kangchenjunga, there was little room for further hesitation in planning the details of the start. The local authority in Sikkim, that is the English Political Officer, Mr. White, had taken in hand the old native tracks leading up into Tibet through the Lachen and Lachung valleys, and along the sources of the Teesta. It had been made possible to ride to the former village, which lies only three miles below the junction with the Teesta of the Zemu, the torrent which carries the drainage of the whole of the north-eastern slope of Kangchenjunga.

Hooker had found the forests in the Zemu glen impassable, and no one could tell us whether they were so

still. But, considering its shortness and the strength of our party, we felt fairly confident that we should be able to hack a way through. We preferred at any rate to take the risk rather than to turn up the Talung Valley and follow Mr. White's route over the Yumtso La (15,644 feet). In this decision we were influenced by local advisers, who told us that to weary our coolies by an arduous mountain march before we brought them face to face with their main work, the passage into Nepal, would be inexpedient. From Mr. White's camping-ground beside the Zemu Glacier we hoped to explore thoroughly its upper basin and the two gaps lying respectively on the eastern and northern flanks of Kangchenjunga, marked respectively as 19,300 and 21,000 feet on the Government map.¹ We had some hopes that the latter might prove practicable for our coolies. If it could be crossed, the circuit of the mountain would be considerably shortened, and we should have more time to spend in exploration before we came to the end of our provisions, which were calculated to last a month. *L'homme propose*—in our case that fearful demon pictured in so many Sikkim temples, 'the God of Kangchenjunga,' disposed.

At Darjiling Garwood and I had been most hospitably welcomed by the Deputy Commissioner, Mr. Earle, and his wife, who took the greatest interest in our plans. He suggested that we should take with us Rinsing, a native surveyor, and the only man known for certain to have crossed the Jonsong La. From Captain Le Mesurier, who was acting as Mr. White's substitute at Gantok, the present residence of the Sikkim Raja, we found letters promising us hospitality on our arrival there, and intro-

¹ In Major Waddell's illustration (*Among the Himalayas*, p. 235) the eastern, not as stated the northern, ridge of Kangchenjunga is depicted, and the gap in view is the 19,300 feet gap between Kangchenjunga and Simvu. The photograph is taken from the Talung side of the Guicha La.

ducing as his deputy one of his local staff, Mr. C. Dover, who now holds the post of Road Inspector in Independent Sikkim. To this gentleman, who subsequently became our companion during the whole journey, we chiefly owed its success. He was in fact our leader. Experienced in travel under Mr. White, he was always energetic, helpful, and encouraging, he knew exactly how to meet every difficulty of the road, and to keep our unwieldy following under a firm yet kindly control. His crowning quality and qualification for such a journey was a constitution on which the only effect of an altitude of 20,000 feet was to increase his appetite and consequently his weight. This is a medical experience sufficiently rare to be worthy of special record.

We left Darjiling for the tour of Kangchenjunga at midday on the 5th September 1899. The floating mists that had been persistent since our arrival still clung heavily about the slopes and mingled with the tree-tops. Heavy showers drifting from spur to spur, splashed from time to time in our faces. The train of baggage coolies had gone on in front, so that our modest cavalcade consisted only of ourselves and our grooms or 'syces,' fine gentlemen who made a favour of carrying even as much as a field-glass. We cantered under the old barracks on the top of the hill, which had to be abandoned because their dampness and dulness drove the British private to suicide. We plodded through the mud of the shabbily picturesque bazaar of Ghoom. The broad cart-road soon entered the forest. The last batch of pale military invalids taking their exercise having been left behind, there was nothing to divert our attention from the charms of the woodland scenery.

At this elevation, between 7000 and 5000 feet, we were above the tree-ferns and semi-tropical jungle in a belt

where oaks and chestnuts, of species differing from the European, and magnolias grew to a great height.

The first impression of a virgin forest is too often one of struggle and decay. Trees, like human beings, suffer from overcrowding. In Sikkim, as is always the case where the soil is rich, and each tree has to fight for its share of sunshine, the stems are very straight, and grow to a great height before branching. The green roof is borne up by myriads of grey shafts or pillars. Individual character, such as is the glory of an English oak or beech, is rare in the sub-tropical grove. There is no burial for the dead, the rotting trunks stand like ghosts among the surviving giants of the forest. But the natural processes of decay are to some extent hastened, or concealed, by the excessive moisture of the climate. The dead tree soon falls, or is kindly clothed by the exuberance of parasitic and creeping plants. The columnar stems of the living trees are ringed with beautiful bands of ferns growing one above the other ; in every mossy fork an orchid plants itself ; convolvuluses, bright with yellow blossoms, trail from bough to bough. The forest is a paradise of plant life. The ground is densely carpeted with rhododendrons, laurels, hydrangeas, and spiræas. But immediately round Darjiling civilisation has stripped the hills of their primeval cloak of verdure and narrowed the limits of the ancient woods. The tea-planter has set his broad mark on the foothills of the Himalaya. Wherever he comes, he burns the great trees, grubs up the undergrowth, and plants in its place rows of little bushes, which give the slopes the aspect of a Rhine vineyard or a gigantic fruit-garden. He has lately learned that to expose friable soil lying at a high angle to a rainfall which even in ordinary seasons is one of the heaviest on the earth's surface, is not without danger. The great storm of September 1899 was exceptional even

for Sikhim, but its lesson may be useful to local planters as well as builders. On our return from the snows we found not only Darjiling partly wrecked, but also the tea gardens scarred and torn in every direction by freshly dug torrent-beds and earth-slides.

After a ride of some ten miles the forest came to an end, or we descended below it, and found ourselves on open ground. Almost at the same moment the clouds parted, and the snows of a broad, blunt, double-headed summit appeared between them. To any one who had made a study of Sikhim photographs there was no mistaking the identity of Kabru (24,015 feet). I recognised it as easily as I should Mont Blanc. We rode on among the tea-gardens, beside channels in which rushing streams were carried either for irrigation or to supply power to the factories. Slowly the snows unveiled themselves, till from the spur overhanging the meeting of the Teesta and the Ranjit the stately mass of Kangchenjunga, borne up on either side by the snows of Pandim and Kabru, displayed to our eyes for the first time its tremendous tiers of precipices. The air was surcharged with moisture, sunset was at hand: 'blue and gold, blue hills and valleys, golden clouds and snows,' is the note I find in my diary. Presently the gold turned to red and amber, laid in broad strips between the darkening green of the foothills and azure pools of bare heaven. The vision of the range was of but brief duration; three inches more rain were to fall during the night.

In place of descending to the Bungalow of Pashok, a shed in the lower forest zone, we halted at the commodious house of Mr. Leicester, the manager of the tea-plantation we had just passed through. His home is charmingly situated on a spur looking straight up the deep Ranjit valley to the snows of Kangchenjunga. The garden held between its cactus hedges a wealth of blossom. But



WILD HYDRANGEAS.

in the hall the stuffed effigies of two plucky terriers, slain in combat with a cobra, showed that this Eden also has its snake. We spent part of the evening in examining a large collection, made by our kind host, of the glorious butterflies that flutter in flocks about the river bottoms, settle, indistinguishable from dead leaves, among the copses, or quiver, bright flashes of colour, wherever the sun pierces the woodland shades.

Torrents of rain fell all night, but the morning broke soft and sunshiny, though the snows were again veiled. Our road wound among the cactus hedges of the tea-gardens, and then plunged steeply through a jungle that grew at every step more tropical, into the lowest depths of the ravine, in which the Ranjit and Teesta unite. From one of its bends there is a vista between the branches of the Watersmeet. We had now fallen to 700 feet above sea-level. Tree-ferns raised their stately crowns above the rampant undergrowth, the air, heavy with the mingled scents of the forest, grew warm and steamy as that of an English hothouse. Tributary rivulets, swollen by the night's rain, dashed in brown bubbling torrents down the green ravines. The track was in places invaded by the brimming river, beside which it scarcely finds room. Presently a row of shabby wooden shanties lined the roadside, their picturesqueness half spoilt by the inevitable zinc roofs. Situated at the end of the cart-track up the Teesta valley from Siliguri and the Plains, this bazaar is a centre of distribution for the interior of Sikhim. During the war of 1888 it enjoyed temporary prosperity. But its position is too confined and unhealthy even for natives.

We now crossed the narrow suspension bridge which spans the united waters of all the southern and eastern glaciers of Kangchenjunga, and entered the Kalimpong District, which has been carved out of Bhutan as the

Darjiling District was out of Sikhim. The chains of the bridge serve the natives as convenient receptacles for the little gay-coloured scraps of cloth, inscribed with prayers, by which the Tibetan traveller, like the Arab of the Sahara, endeavours to propitiate the powers of nature. On such a characteristically civilised and modern structure they looked oddly out of place. Underneath, the Teesta flows in a broad, deep, brimming stream, closely confined between its forest banks. The fisherman who loses his balance and falls into its swift and silent waters is seen no more; to the Lepchas it even serves on occasion as a means of disposing of their dead. One instance of this practice came under our personal notice.

From the river-bank to Kalimpong is a climb of 3200 feet. Our coolies preferred the old path to the rough cart-road which was made and used during the Tibetan war. The Sikhim coolie has through the practice of generations become, even when heavily burdened, so indifferent to the angle of his track, that he prefers a ladder-path to any reasonable zigzag. By reason of his failings in other respects, this valuable quality is sometimes overlooked. The first flight of our staircase was very steep and warm, too steep to be ridden up with comfort, but not so warm as to render walking any severe penance. I have been as hot in an Italian valley, and a great deal hotter in the Spanish Pyrenees in June.

When we had left the palms below, and reached the more open slopes, the air grew sensibly fresher. We rested for a time near a tea-house, in a pleasant glade, and then rode on over cultivated hillsides, joining the more circuitous cart-track two miles below our destination.

Kalimpong, like Darjiling, lies along a crest, but the slopes are less abrupt, and afford far better 'building sites.' The long native bazaar has at its northern end a Scottish

church and manse, most incongruous intrusions on the landscape, and at the other, a Government bungalow, which a short time before had been a comfortable wooden house, but had, at the time of our visit, fallen into sad disrepair. Rain was dripping through the roof on to the broken bedsteads, so that we had to effect a good deal of careful shifting of furniture in order to make ourselves secure during the night from premature shower-baths. Mists veiled the snows, while we enjoyed a pleasant afternoon stroll and inspected the missionary compound. Few missionaries can have so choice a post as those at Kalimpong. A women's Bible-class was going on in the Church, or Kirk, a building of severe 'Early English' architecture, with none of the internal accessories which we are accustomed to believe appeal most forcibly to primitive minds. I confess to having collected no statistics of conversions. Of the widespread benefits conferred by the Hospital and Dispensary and Medical Schools worked in connection with the Mission there can be no question.

An annual fair has recently been instituted at Kalimpong. Its official and more serious objects are to develop agricultural industries, and encourage the trade in pastoral products. But it has also attractions for the curio-hunter. Hither, once a year, come peasants with silver ornaments, pedlars from Lhasa with temple trumpets, hand prayer-wheels, or oddities in the way of old silks and banners—merchants with excellent Tibetan ponies, which, if the paths were put in order and the bridges repaired, would make travel in Sikhim a pleasure, and access to the snows easy.¹

Kalimpong, according to Mr. Louis, was a few years ago the scene of an adventure which might serve Mr. Rudyard

¹ Fuller details as to Kalimpong and its missionaries will be found in Mrs. Donaldson's *Lepcha Land*, and in Mr. Louis's *The Gates of Thibet*. The roads to the Jelep La and Giagong are fair bridlepaths. The cross country tracks are mostly footpaths, badly provided with bridges.

Kipling as material for a story. An English soldier, under arrest on suspicion of having robbed the regimental chest, was sent down to Kalimpong, and confined in the house that serves as a local prison. He was followed by a Tibetan girl, whose heart he had won. With the help of some friends, this energetic and faithful damsel dug a gallery under the wall of the place of confinement, and rescued her lover. The happy pair escaped across the frontier into Tibet, and have never been heard of since.

We looked out next morning from our pretty verandah over a pleasant country, a land tamed to human uses, and ready in return for light labour to satisfy the simple needs of a primitive people. No wonder the Tibetans call Sikkim¹ by a name signifying 'The land of rice and fruit.' The hills round Kalimpong are broad-backed, and, when not bathed and blotted out in passing showers, bright and sunny. Bamboos grow in gigantic tufts among the brilliantly green terraced rice-fields. Little wooden farm-houses with white walls, thatched roofs, broad eaves and projecting balconies, scattered carelessly upon the slopes, bear witness to the peaceful character of the inhabitants. Each is surrounded by its plot of cultivated buckwheat, millet and maize, oranges and plantains. *Mutatis mutandis*, I was reminded of the farms and uplands of the Trentino. The absence of any provision for defence against human enemies in the choice of sites is a marked feature in the Eastern Himalaya. Peace would seem to have been the condition of the land even before British rule brought it Progress and Prosperity.

Our gently rising path presently entered a forest, to which the scent-suffused vapours, loitering between the tree-tops, gave a pretty touch of mystery. The leaves of

¹ The Kalimpong District, now attached to Darjiling, was once politically part of Bhutan. But in character it resembles Lower Sikkim.

the low shrubs sparkled with silvery drops ; creepers hung their long festoons of yellow blossoms from bough to bough, white or red patches tipped the foliage of the variegated-leaved plants in the underwood, and made splashes of brilliancy among the ferns, here and there an orchid out of season hung from a tree-fork its long tassels of saffron or purple blossom. Had there been animals in this enchanted wood, the landscape might have passed for Eden. But the wayfarers we met on the road gave it rather the air of Arcadia. Out of the depths of the forest came companies of mild-eyed, melancholy Lepchas, slender, timid figures, recalling irresistibly the poet's Lotus-eaters. By birth denizens of the woods, they are by habit and necessity naturalists, they know the ways, and haunts, and voices of all its beasts and birds, the properties of all its plants. May our British officials be able and willing to protect and preserve them from what I fear must otherwise be their inevitable fate, to be superseded by the more sturdy Tibetan and the more energetic Nepalese.

At the eighth mile our path crossed a ridge and began to descend, at first through forest, and then among open fields. We looked across a wide, sunny basin, sparsely sprinkled on its broad, upper slopes with wooden huts, and watered by streams which ran far below us in narrow clefts. After three miles of gentle descent we came to the Pedong Bungalow. It may serve as an example of how much the condition of these hostellries depends on the person in charge. The caretaker here is an old soldier who takes a pride in his post, and the passer-by consequently finds all the comfort he has any reason to expect.

A new Roman Catholic Church on the opposite hill was pointed out to us. Pedong is the seat of a mission of which the veteran, Father Desgodins, whose career as a missionary in Tibet has now extended to nearly half a

century, is the head. We regretted that our stage had been so short that we felt bound to push on for another. It consisted of a descent into a very deep valley, followed by a climb of 1000 feet to the bazaar of Rhenok. The stream, which runs in a picturesque gorge, forms the frontier of Independent Sikhim. Between it and the first cottages we were met by a deputation of yellow-coated natives carrying bamboo bottles of *marwa*, a decoction brewed from millet seed (commonly called native beer, but more like white wine negus) which is usually imbibed through a straw. Taken at rare intervals and in small doses it is, in default of anything better, refreshing. Sir J. Hooker's somewhat unexpected remark that it 'rather excites than debauches the mind' may be quoted as a testimony to its harmless nature. A recent traveller goes further by recommending it as a 'temperance drink.'

The bungalow at Rhenok is a small native house, used also as a post-office, in the middle of the village, and consequently noisy. Prominent among the noises were the drum-beating and clatter of a Hindu temple, the only one we noticed beyond Darjiling. From our balcony we looked out on a dashing stream, half buried beneath orange trees and tall, feathery bamboos, amongst which green parrots and rainbow-coloured humming-birds flitted from shade to sunshine.

Here we left the steep uphill track to the Tibetan frontier and the Chumbi Valley followed by our troops in 1888. It is two stages, 25 miles of distance and 9000 feet of ascent from Rhenok, to the British fort at Gnathong.

Our path skirted warm cultivated hillsides, crossed torrent beds, where the air was alive with swarms of gorgeous blue and black butterflies and exquisite tiny birds, passed some deserted native copper-mines, and then climbed the ridge that separated us from the next tributary

of the Teesta and the basin which Gantok dominates. Half-way up the hill we were entertained by a well-to-do native with a meal of pineapples, oranges, gigantic lemons, and flavourless bananas. At the top, where we found a Bungalow and a small bazaar, we were welcomed by a deputation from a neighbouring monastery, and met by a gaily caparisoned mule sent by the Raja for my use.

On the crest of the ridge was a conspicuous Chait¹ or Buddhist tomb. These monuments embody in their quaint form much symbolism, but on what is symbolised authorities are not altogether agreed. The begging bowl of the Buddhist monk forms, however, an easily recognisable member of their architecture. The view before us was very charming. We overlooked a wide basin, covered by forests, here and there broken by patches of recent cultivation. On the opposite hill, some ten miles off, the buildings of Gantok were visible. The downward path first traversed cultivated fields, and then led us back into the primeval woods, among the columnar stems ringed by coronals of parasitic plants, the flying festoons of creepers, and the rich, deep carpet of ferns and flowers. Frequent streams trickled or plashed down narrow clefts in the greenery. Larger torrents tumbled among the mossy boulders, falling in sudden jets or spreading in silvery curtains. Everywhere there was the same fabulous luxuriance of plant life.

On the brow of a steep descent stood a row of high benches arranged for coolies to rest their loads on. Plunging again into a valley bottom (2880 feet), we visited a wild tangled garden full of orange-trees and other warmth-loving plants, which has been created by the

¹ The Chait of Sikkim, the Tibetan Charten, says Sir J. Hooker, 'is a square pedestal surmounted with a hemisphere, the convex end downwards; on it is placed a cone with a crescent on the top. Between the square pedestal and the hemisphere or bowl there is often a succession of diminishing steps, and within the crescent a flat circle surmounted by a ball.'

Political Officer. Half-way up the last ascent to Gantok we were met by Captain Le Mesurier. He escorted us past the barracks to the charming residence Mr. White has erected on the edge of the forest that stretches up to the Penlong La. In this far-off and primitive region it was a surprise to meet with an English garden-gate, and to find ourselves among winding paths, trim level lawns, and rosebeds in the 'grounds' of a two-storied gabled villa, such as is a common object on a Surrey hillside. For a moment one looked for the herbaceous border, the shrubbery, and the specimen conifers. The next, one was conscious of thickets of bamboos and plantains, of purple and saffron orchids drooping from the tall white stems of the old forest trees that had been wisely spared, of a confusion of piled-up clouds and snows, framed high between their branches. And in the porch, in place of the liveried footman or beribboned parlourmaid, stood fantastic Lepcha orderlies, dressed in striped blue and white kilts and red jackets, and crowned by conical straw hats resembling nothing so much as a waste-paper basket with a peacock's feather stuck into one side of it.

Thanks to our most kind hosts, Captain and Mrs. Le Mesurier, our stay in this earthly paradise was an interlude of perfect rest and enjoyment. The romantic beauty of the landscape was almost beyond belief. Looking out of the windows of an English drawing-room on the snows of Kangchenjunga, I felt that a worn-out mountaineer might be well content to spend the end of his days at Gantok, that here was the true land of the lotus-eater for the afternoon of the Alpine Clubman's existence. Mr. White deserves to be congratulated on having made the best use of an opportunity rarely granted nowadays to an Indian official, that of remaining long enough in one post to create a home. I must not, however, wrong him by

suggesting that he has himself led a lotus-eater's existence in Sikkim. Far from being content 'to watch the long, bright river drawing slowly His waters from the purple hill,' he has energetically explored many of the wild valleys that lie beyond his paradise, and has set his foot and planted his camera in the remotest corners of his dominion. The only complaint geographers have to make of him may be summarised in the common provincial phrase that 'he has kept himself too much to himself.' The little we know of his wanderings in the highlands of Sikkim has been gathered from one of his companions.¹ He appears to have managed to evade only too successfully the tradition and practice of official 'scribble,' of which every one in India, from the Viceroy downwards, complains.

Gantok, the present capital and royal residence of Sikkim, is neither a town nor even a village. It consists of a few scattered groups of native cottages at different levels on a steep hillside. It was probably its distance from the Tibetan frontier and its comparative proximity to Darjiling that recommended the locality to our officials for the seat of Government, when an earthquake shook down the former home of the Raja at Tumlong, a day's march farther north.

It is not my purpose to enter into the obscure annals of Sikkim and its ruling family, or to discuss at any length the political relations of this petty state with the British Empire. Sir Steuart Bayley has given a very clear and succinct account of the circumstances that led to the Sikkim campaign of 1888. It is perhaps rash to take any exception to the conclusions of one who speaks with high official authority, yet I am persuaded that the influence of the Mandarins of Pekin in Tibet is, or has been, greater

¹ See *Proceedings of the Royal Geographical Society*, New Series, vol. xiv. In the present year, however (1903), Mr. White has produced an excellent map of Lhonak.

than the late Lieutenant-Governor of Bengal allows, and that throughout our quarrel with the Lamas, the Chinese Government could at any moment have put a stop to the wanton acts of aggression to which we for long submitted, had they thought it to their interest to do so.¹

Much information on these matters has been introduced by Major Waddell in his recent work, and the curious may find further details in the historical chapters of the official *Gazetteer of Sikkim*. The following outline of its history during the past hundred years may suffice here.

Early in the nineteenth century (A.D. 1817) the East India Company interfered to check the advance of the Nepalese and their conquest of Sikkim, which was then a Lepcha state, ruled by Tibetan Buddhists, immigrants from the north. From this date the Company assumed, unchallenged by Tibet, a vague suzerainty over Sikkim. In 1835 the Raja ceded to us the Darjiling District, then under forest. In 1848 Dr. Campbell and Sir Joseph Hooker were arrested by the Sikkimese Prime Minister while travelling in the country. This outrage led in the usual course to some further annexations on our part. But the Sikkimese continued to be troublesome; they harboured criminals and kidnapped British subjects. In 1861 our troops advanced to Tumlong, then the capital, and a treaty was made which asserted our suzerainty in very stringent terms. We assumed control of the foreign policy of the State, claimed the right to regulate its commerce and to make roads, and insisted on the reigning family giving up their habit of living chiefly in Chumbi, the border district of Tibet, and becoming resident in their own dominions for nine months in the year.

In 1873 a man of unusual energy and foresight, the

¹ See *The Sikkim Expedition of 1888*. Swan, Sonnenschein and Co., 1900. See also *Gazetteer of Sikkim*, Introduction by H. H. Risley (Calcutta, Bengal Secretariat Press, 1894), p. viii, as to Chinese influence and intrigues in Sikkim in 1886.

late Sir John Ware-Edgar, was appointed Deputy Commissioner at Darjiling. In a remarkable report he laid down the lines of policy which in his opinion ought to be followed, and his views were so far carried out, that a bridle-road was made to the Jelep La, on the Tibetan frontier.

In 1875, acting as the Paramount Power, we secured the succession of the present Raja to the throne. Nothing worthy of much note happened till in the eighties the Bengal Government resolved, in the interest of Indian traders, to endeavour to open Tibet to British trade. In 1884 the Financial Secretary to the Indian Government, Mr. Colman Macaulay, visited and exchanged information with the Tibetan officials on the frontier. In the following year, by order of the India Office in London, he went to Pekin and obtained from the Chinese Government 'passports for a mixed political and scientific mission to proceed to Lhasa for three or four months to confer with the Chinese Resident and the Lhasa Government on the free admission of native Indian traders to Tibet and the removal of obstructions to the trade through Sikhim and Darjiling.' In the following year the Mission was organised on an imposing scale, and actually assembled at Darjiling. It never got any further. 'The Government of India consented to forego their intention of despatching a mission to Lhasa . . . the monks concluded that we broke up our mission because we were afraid of them.'¹ They consequently defied us, established a fort and walls on our frontier, and finally invaded in force our territory, thus bringing on the 'little war' of 1888, in which a battle was fought at an elevation of over 14,000 feet above the sea-level, if an engagement is to be called a battle which consisted in our Gurkhas pouring volleys into the backs of a flying foe.

¹ *Gazetteer of Sikhim*, p. vii.

I ought perhaps to give my readers some more precise idea of the locality of this campaign. For this purpose a short geographical dissertation will be necessary. East of the Teesta Valley a long ridge running parallel to the Singalela Spur, that is north and south, separates the Teesta basin from that of the next stream to the east, the Ammo Chu. The lower part of the Ammo Valley is in Bhutan; the upper, formerly part of Sikhim, known as the Chumbi Valley, now belongs to Tibet. It serves as a southern wedge of that country driven in across the Himalaya between Sikhim and Bhutan. Owing to the political boundaries, and the possession of the lower valley by Bhutan, access to Chumbi from Sikhim is not up that river but from the Teesta basin over high passes, the most frequented of which is the Jelep La (14,390 feet). These were frequently used by the natives of Sikhim, when taking refuge from the rains, and are on the most direct road from Lhasa to India. Consequently when the Tibetans determined to try if they could not drive or frighten us out of Sikhim, they established themselves on the Jelep La, and from that point made further incursions into British territory. The principal engagement of the campaign was fought on the pass itself, which the Tibetans had fortified, after their usual fashion, with a long wall, which, however, they did not wait to defend.

The pursuit of the flying rabble was speedily abandoned, though the temptation must have been enormous. For immediately below the pass, in our grasp and, as the base of an unprovoked attack, justly forfeited had we chosen to seize it, lay the upland valley of Chumbi, the summer resort of the Sikhim Raja. It is by all accounts a most covetable district, without any of the disadvantages of climate and situation which affect Darjiling as a health resort. The late Mr. Louis described it as 'an

Engadine of the Himalaya.' 'The rainfall in Chumbi,' he continues, 'is something like one-eighth only of what it is in Sikhim, the valley is at an elevation of 9000 feet, but the climate is warm and dry, and the finest weather prevails there, while Darjiling and Sikhim are flooded with rain and filled with reeking mist. The valley is about a mile in width with the river and its numerous islets in the centre, eminently fertile everywhere, and highly cultivated with fields of corn and barley, while there are rich pasturages on the hill-slopes around it, dotted all over with clumps of fruit and other trees, a varied, rich vegetation quite different from that of Sikhim. There is good fishing to be had in the river, and the whole valley is in fact a lovely bit of smiling landscape, terminating on every side in snow-clad mountain tops. Pervading it all is said to be an air of affluence and *bienêtre* to which the interior of Sikhim, rich as it is, can bear no comparison whatever.'

Against the temptation of at the same time inflicting a just punishment and acquiring a most desirable addition to the health and happiness of the English in Bengal, the virtue, or the timidity, of our statesmen was proof. It is easy to discover and to appreciate the force of the considerations which may have influenced them. China was at that date believed to be a strong power, friendship with which was our best policy. Any annexation, however expedient and justifiable in itself, would, it might be argued, be looked on both by Chinese and Tibetans as but a first step towards Lhasa, and would render them our permanent foes. Unselfish generosity, on the other hand, might make them our friends. Unfortunately, as most statesmen east of Aden soon realise, generosity is only practised among Orientals by the weaker to the stronger. In their eyes it is a false name for fear. China has in fact replied by massacring

missionaries and yielding Manchuria to Russia. Tibet has repaid our forbearance by treating with disdain the stipulations of the treaty which was to some extent to open its gates to Indian commerce. The prophetic words of Sir Joseph Hooker, written fifty years ago, deserve to be recalled. They have been fully justified.

‘We forget that all our concessions to these people are interpreted into weakness; that they who cannot live on an amicable equality with one another, cannot be expected to do so with us; that all one tells of powers and resources are mere boasts to habitual bullies, so long as we do not exert ourselves in the correction of premeditated insults. No Government can be more tolerant, more sincerely desirous of peace, and more anxious to confine its sway within its own limits than that of India, but it can only continue at peace by commanding respect and the punctilious enforcement of even the most trifling terms in the treaties it makes with Indo-Chinese.’¹

After this curious little war, the newly asserted pretensions of Tibet, and through Tibet of China, to some kind of suzerainty over Sikhim, were put an end to; but no kind of penalty was exacted from the aggressors either at Pekin or Lhasa. To quote again Sir Steuart Bayley, ‘The Tibetans were let off very cheaply for their wanton aggression.’

The Sikhim Raja now found himself definitely cut off from a country endeared to him by birth and through family connections, and permanently established in the position of a vassal of the British Empire. This did not at all fit in with his aspirations, and growing more restive as the leading-strings were drawn tighter, he in 1892 made a bolt with his wife and a small retinue over one of the Singalela passes south of Kangchenjunga for Nepalese

¹ *Himalayan Journals*, vol. ii. p. 223.

territory. He succeeded in crossing the frontier, but only to be arrested and sent back to Darjiling by the Nepalese authorities. After this escapade he and his attractive consort, a noble lady of Lhasa, were requested to reside for three years as state prisoners at Kursiong near Darjiling. It was not until 1896 that they were allowed to resume the reins of power under the supervision of a British Resident and a British regiment, not at Tumlong, where their home had been destroyed by an earthquake, but at Gantok, a day's march nearer Darjiling, and a spot indicated by Sir John Ware-Edgar as likely to prove a convenient centre for commerce.

Within the last few years our Political Officer in Sikkim has done a good deal towards opening up the country by establishing bridges and improving the native tracks, but the Convention with Tibet made after the late war has, writes Major Waddell, 'ended in a fiasco.' The boundary has not been delimited. The Tibetans are at Giagong, while the Transfrontier Map (Sheet 7) published in 1889, and the last map compiled by the Political Officer in Sikkim in 1902, show our frontier on the Kongra Lama. In 1892 Mr. White felt unable to authorise Mr. Gammie, a Government botanist, to travel within our treaty boundary in Lhonak. Last year, however, he himself visited the district with a large party. The opening of a trade-mart near the Jelep La has been nullified by the restrictions imposed by the Lhasa Government on Tibetan traders. Whether this action is due to the Lamas or to the Chinese authorities seems doubtful. Major Waddell attributes it to the latter. But I was informed that among the more influential Lamas there are rich trade monopolists who wish to keep the commerce of the country in their own hands. That it is the Government of Pekin and the priests of

Lhasa rather than the people of Tibet who desire to maintain the barriers and keep Tibet a closed country, seems to be the belief of those most competent to form an opinion.

Any one with the slightest acquaintance with Orientals and their politics will on this statement of facts find it hard to understand how the Indian Government could have been led to abandon at the last moment an important enterprise, to which they had pledged themselves in every possible way. To act in this manner in the East is proverbially to earn the contempt of all concerned. The Government of India cannot have been blind to this fact. The reason of its decision must be found in the Yellow Terror ; the opinion that China was a formidable aggressive power which prevailed before her war with Japan, and a further belief that the particular sacrifice in Tibet was worth making for the sake of more important matters elsewhere, our interests on the then new Chino-Burmese frontier. The sacrifice may have been worth the making ; it may even have been necessary ; that is a matter on which the late Lord Dufferin's opinion is not to be lightly contested. But that it was an unfortunate necessity, and that, in respect of its local consequences, it has proved disastrous, will hardly be denied. It involved us in a fruitless and somewhat costly campaign which threw back indefinitely our chance of opening Tibet to Indian commerce. The Lamas were confirmed in their belief that they can not only shut their passes in our face, but also break their pledges to us, or even invade our territory without being subject to any serious retaliation or penalties. They seem to have resolved on a policy of isolation ; but unfortunately not of complete isolation.

It must be obvious to every one who has paid any attention to recent events in this quarter, that the day is

near when our relations with Tibet will become a problem of practical politics. Hitherto, if we have succeeded in repelling, and probably in preventing the repetition of, aggressive action on the part of the Tibetans, we have been singularly unsuccessful in our attempts to open their country. We can hardly be said to have reaped the proper fruits of our easy victories. It would rather appear as if by our not altogether consistent action with regard to Mr. Macaulay's embassy, we had hardened the hearts of the rulers of Lhasa and led them to believe that, should China prove a broken reed, they may find in another direction a suzerain beneath whose shadow they might defy any intrusive disposition on our part. It is difficult on any other hypothesis to account for the sudden desire to see St. Petersburg which recently seized a party of this generally stay-at-home race. We shall hardly allow Tibet to become a Russian Afghanistan, and it may therefore be expedient to keep open our points of contact with the 'shy recluse' of Potala.

The problem is no doubt a difficult one, even for the experts of the Indian Government. So much has to be undone. Patience, intelligence, and above all consistency will be required. Our staff of officials in Sikkim may advantageously be strengthened; they may be required to acquaint themselves with Tibetan, and to lose no occasion of cultivating friendly relations with their neighbours across the border. We may renew our attempts to establish trade-marts and to induce the Tibetans to come to them. We may continue to construct and improve communications, and on sounder lines, disregarding the round-about native tracks, and paying more attention to the surface drainage of our new roads, a technical detail of no small importance in such a climate; we might even make a light railway up the Teesta Valley for some distance.

The position of the Indian Government seems technically clear. It can claim the fulfilment of the terms of the last treaty. They will be fulfilled as soon as we can convince the rulers of Lhasa and the Chinese Government that we are in earnest, but not before. To produce this conviction, we shall probably have to suggest that non-compliance may be followed by serious consequences, as for example the annexation by us of the Chumbi Valley. It may at the same time be found expedient to warn the Tibetan Government that we shall only respect their independence so long as they preserve it intact themselves, and refrain from any attempt to grant exceptional or exclusive privileges to other powers. Unless this is done, we are not unlikely to hear of the arrival of more 'Buriat' visitors at Lhasa and of fresh parties of Lamas at St. Petersburg, if not of the establishment of a more or less official Russian agency in the Holy City.¹

The most prominently placed object in Gantok is the old Intchi Gumpa or Temple, which stands, as Buddhist temples in Sikkim usually do, on the narrow top of a spur projecting into the valley of the Rongli Chu, at a height of about 3000 feet above the valley and 6000 feet above the sea. It is built in the form of a simple parallelogram with clay walls slightly bulging at the base, and a thatched roof. The entrance is through a porch containing several

¹ I leave the preceding pages as they were written. But while they have been passing through the press, telegrams from Calcutta have been published in the newspapers which indicate that the Government of India is already acting somewhat on the lines here suggested. The first step apparently was Mr. White's Survey of the Frontier above referred to. During the present summer (1903) engineers and soldiers have been employed in improving the roads in Sikkim. A still more important step has been taken. The Tibetan Government has been requested to send Commissioners to discuss the present position of affairs with representatives of the Indian Government. The British Commissioner is Colonel Younghusband, and he is assisted by Mr. White and our companion Mr. C. Dover. The last news is that following their traditional policy the Tibetan Commissioners have not kept their appointment.

large prayer-wheels. It is supported by timber columns, and its walls are frescoed with effigies of the Gods of the Four Quarters, yellow, red, green, and white demons of the most appalling character. Passing through the vestibule and the massive doors, the visitor enters a hall supported by two rows of wooden pillars. The interior is covered with frescoes, wheels of life, landscapes of the Chinese school, life-size figures representing fantastic saints or deities, gods of the mountains, and demons of the wilderness. Amongst them the God of Kangchenjunga is prominent, a very fearful and hungry spirit riding on a white lion, to whom meat offerings must be presented by the Faithful. The pillars and beams are coloured red, picked out with lotus rosettes. Red and gold are the prevailing colours, and the general effect is rich and harmonious, more so than in other Gumpas, where the decoration appeared to be more recent and comparatively crude. At the farther end, opposite the door, behind little tables laden with flowers and votive offerings, stands a row of serene statues of the Buddha and his chief disciples. The yellow-frocked monks, or Lamas, seemed to take pleasure in showing off to us their shrine and its accessories.

By climbing a path to the left it was easy (if you previously prepared your legs to repulse the leeches for which Gantok is notorious) to reach a brow immediately behind the Residency, whence there is a superb view of the snows. Nearest on the left rose Narsing, a rocky crest of only 19,140 feet, which yet, owing to its comparative proximity, makes a fine show. The massive cupola of Pandim, supported by grey granite cliffs, next detained our eyes. In the gap between it and Kangchenjunga a long curve of pure snow, rising gently at either end, was identified as the topmost ridge of the twin-crested Kabru.

In the centre the soaring lines of Kangchenjunga sprang up high above its attendant summits. On its southern precipice the horseshoe band of rock, conspicuous in all photographs from Darjiling, was distinguishable. The two peaks are connected by a rock-ridge with a deep notch in it; from the lower the long eastern crest that forms part of the skyline of the mountain when seen from Darjiling, sank towards us; from the higher ran out a northern crest hitherto unseen. In the eyes of the mountaineer it possesses a peculiar practical interest, of which more hereafter.

Siimvovonchim (familiarly known as Simvu), 22,300 feet, came next, a tame mountain composed of three snowy eminences, a Himalayan Blümlis Alp, offering a tempting prey for the explorer, if not for the rock-climber. East of it spreads a broad névé sending down an ice-fall, to join a trunk glacier lying in the Passandam glen, a branch of the Talung Valley, to which other glaciers on a southern spur of Simvu appear to contribute. The saddle at the head of this névé leads to the Zemu Glacier. Colonel Tanner reports it to be 17,300 feet high and occasionally used by natives (*Survey Reports*, 1883-84, p. xxix). Colonel Tanner is not, however, particularly when he repeats the reports of others, an authority in whom I am able to place complete reliance.¹ I believe the saddle to be higher, and as it leads practically nowhere, I doubt its ever having been used by natives. It is certainly not accurately described as 'only partially covered with snowfields on the south side.' It seems to me possible that there has been a confusion between it and the Yumtso La, which leads north from Talung Monastery.

Out of the névé just mentioned springs a tremendous cliff capped by rock needles and columns, the buttresses

¹ See *Alpine Journal*, vol. vii. p. 438, for a detailed commentary on Colonel Tanner's report.

KANGCHENJUNGA

PANDAN

THE SNOWS FROM GANTOK



of Siniolchum. The peak itself (22,570 feet) tilts against the sky, lifting, as it were, its silver spear-head to catch the first gleam of the rising dawn. Round about its base, great granite jags are thrown up against spotless snow-fields as the Chamonix Aiguilles are against Mont Blanc in the view from the Col de Balme. Siniolchum, which we here admired for the first time, is, and is likely to remain for many years to come, the Jungfrau or Virgin of the Sikkim Highlands. From Darjiling it is seen at a disadvantage behind nearer peaks and ridges. But the traveller who has gazed up to its crest from the east or north will not readily forget the lovely apparition and its almost incredibly perfect grace of form. Whiter than the Weisshorn, seen from the Bell Alp, it is as steep as the Matterhorn, and from its glacier base to its top the peak is twice the height of the Zermatt mountain above the Hörnli.

Looked at as a whole, the view from Gantok is as unlike the Darjiling panorama as two distant mountain views of the same chain can well be. At Gantok a long waving crest of forest, a few miles off, arrests the eyes and forms the base from which the great snow-peaks spring: the eyes are not, as at Darjiling, led on over a complicated succession of distances to the snowy range. The peaks stand in a line, each separate and showing itself to the fullest advantage, but they do not compose a group. In this respect they resemble the Oberland peaks seen from Bern rather than the Monte Rosa chain from Monte Generoso.

I used to hurry out every day before the mists rose to watch the morning gleam, the solemn service of sun worship, in which the priests were mountains. But the flesh is weak, and our photographers were too trustful of the climate, so that somehow or other they failed to catch the

fleeting moments in which the complete panorama could be secured. Mr. White has since kindly sent me a small photograph of the view from the neighbouring Penlong La, which enables me to refresh my memory and confirm my outline sketch of the splendid prospect.

We found plenty of practical occupation in superintending details connected with our baggage, the supply of our coolies with warm boots and snow spectacles, or in the inspection of the store of Mr. White's photographs, which lay scattered about his office. Occasional diversion was afforded by the arrival of a picturesque pedlar, giving Lhasa as his last resting-place, provided with a trumpet made of human thigh-bones, or a pair of ornamental chopsticks, or a wide-brimmed lacquered wideawake, such as are said to be worn by noblemen of high birth and office in the sacred city.

Two of our afternoons were spent most amusingly in an exchange of tea-parties with the Raja and Ranee. Their arrival at the Residency was a delightful spectacle. The Raja, a middle-aged Mongolian, dressed in flowing purple, rode first on a gaily caparisoned pony; the Ranee followed in a palanquin—a little lady wearing above her smiles an enormous barbaric tiara built up of coral, pearls, and turquoises. Behind her came the heir-apparent and another child carried on the shoulders of kilted and red-coated retainers. As the procession advanced rapidly across the garden lawn in front of the orchid-hung branches that framed the sunlit snows of Kangchenjunga and Siniolchum, I had to rub my eyes to assure myself I was not either in a dream with *Alice in Wonderland* or assisting at the first night of a burlesque opera.

The next day the Raja returned our hospitality, and we enjoyed the doubtful delights of buttered tea in his temporary home, a cottage no larger than the lodge to

many English parks. The court was fully represented. There were, besides the Raja and Ranee, the shrewd-looking Prime Minister ; the Head Lama of Pamionchi, an immense man in red, a Buddhist cardinal ; another formidable personage robed in a leopard skin ; two black-haired little ladies in waiting, and the bright young heir, a boy whose great ambition is to see London. He had been declared to be the reincarnation of a defunct saint of great merit, and destined to the priesthood. But Viceroys can do anything, even deincarnate, and fortunately for the lad, his elder brother, having succumbed to the Tibetan influences which nearly brought the present Raja to ruin, and having refused to return to Sikkim, has been formally cut off from the succession. Our conversation through interpreters was necessarily limited, but the Ranee showed her affability by royal smiles. Poor lady, she has not all the liberty she could wish ; for a stern suzerain will not allow her to go on visits to a brother-in-law at Shigatze in Tibet, who, according to the custom of the country, is also her husband.

There is some compensation in store, however, for the royal family. The Bengal Government has acquiesced in the erection of a new house, or palace, for the ruler of Sikkim, which will probably surpass in size and durability any private dwelling on this side of Lhasa. It stands on the crest near the Gumpa, and is conspicuous for miles around. The walls are of dark-coloured, almost black, stone. Tablets are let into them containing charms against the demons of the four quarters. Over the porch is a finely carved balcony, from which the Raja will be able to witness the so-called devil-dances held in the level courtyard beneath it. The wooden columns supporting the hall of audience are heavy and almost Assyrian in form. The building has two stories, and a heavy projecting roof of sheet iron. The details are interesting as a specimen of the work of Tibetan

architects. When we were at Gantok the interior was still undecorated, and it was a question whether the revenues of the State would justify the expense of sending to Lhasa for artists to fresco the walls, or whether the Raja would have to content himself with local talent.¹

At Gantok our baggage-train had to be organised. What was possible had been done before leaving England. We had brought with us Whymper tents and provisions ready packed, each day's supply, down to salt and sugar, done up separately. But coolies had to be collected and furnished with tents, boots, blankets, and snow-spectacles, and last, not least, food sufficient for a sojourn of three weeks to a month in the wilderness.

The ordinary arrangements for transport in Sikkim are of the most primitive character. Until quite recently the paths among the mountains were, as a rule, too bad for horses. They are still so in many directions. The custom of the country is therefore for the traveller to apply to the village chiefs along his route to furnish him with relays of porters. As a matter of course, the frequent shifts involve interminable delays; coolies do not come when sent for; they desert when discontented; they prefer to make very short stages, about ten miles a day. Time in the East is no object, and the rare official visitor on his tour does not desire to press on. Ten A.M. is the time mentioned by a recent Anglo-Indian visitor to Sikkim as a reasonable hour for starting! The traveller in a hurry, particularly if he has any love of early starts, is apt to see his trip brought to a premature conclusion by the desertion of followers, outraged in their tenderest point by having their hot breakfast interfered with. This was the first experience of an American couple, Dr. and Mrs. Workman, who have since travelled widely and climbed high in the Himalaya.

¹ The palace is now (1903), I hear, fully completed and inhabited.

From such a fate we were preserved by the kindly help of Captain Le Mesurier. I do not care to think of the amount of trouble he was good enough to put himself to on our behalf. It was largely due to his untiring energy and constant forethought that we were able to carry our journey to a successful conclusion. He summoned our coolies; he collected their food-supply. He lent us the invaluable services of Mr. Dover, who knew the country as far as paths go, and what was still more important, knew the people and their languages. Without his company we should hardly have got beyond the Zemu Glacier.

Acting under the advice of another friend, Mr. Earle, then the Deputy Commissioner at Darjiling, we had secured there a certain number of the sturdiest of the local coolies. From the villages round Gantok Captain Le Mesurier brought together a second contingent. Each set was under a sirdar, or headman, who was responsible for their conduct. They were all volunteers, and paid considerably above the market rate in consideration of the nature of the work before us. The Darjiling men were mostly Bhutias, that is of a Tibetan type; the villagers were, as a rule, Lepchas. Despite their fragile, almost feminine, appearance, they proved more tractable and little less efficient than the Bhutias. On our first arrival at the Zemu Glacier our whole train amounted to over fifty, but as we consumed our provisions, we gradually reduced their number.

As an additional precaution we took with us six of the Sikhim Ghurka police. They were tough little fellows, who carried guns, kept order in camp, and would, in case of need, have been delighted to protect us from any cross-grained shepherds or Tibetan marauders whom we might chance to meet in the debatable land north of Kangchenjunga.

The route we chose from Darjiling to Gantok is not the shortest. In a direct line as the crow flies the distance is little more than thirty miles. In our seventy miles' ride we had gone up and down altogether some 20,000 feet. In the recent *Routes in Sikkim* (1900) will be found a description of a more direct path by which an energetic rider can cover the distance in two days. Following local advice, we, travelling at the end of the rainy season, thought it prudent to avoid short cuts through the unhealthy valleys, and thus to diminish as far as possible the risk of any of the party catching fever before we reached high altitudes. In this we were successful, and I may say here, once for all, that neither from fever, leeches, nor venomous flies did we suffer to anything like the extent we had been led to expect by the reports of some of our less fortunate predecessors.

CHAPTER V

THE TEESTA GORGES

THE track through Gantok and Tumlong to the head-waters of the Teesta, which, acting on the best local advice, we were following, is a singularly arduous and circuitous one. It is in fact an adaptation of the old paths connecting village with village, and in place of mounting the main valley of the 'straight flowing river'—one of the native names of the Teesta—takes, as far as Samatek, a serpentine course in and out and up and down among the basins of its eastern tributaries and the spurs that divide them. It thus crosses a series of passes of from 6000 to 7000 feet, separated by valley-bottoms, where the path sinks nearly to 2000 feet above sea-level. 'Hills' of 3000 feet and more are consequently its distinguishing feature. It is probable that it would have been better to incur the initial cost of making a good bridle road up the main valley in place of attempting to repair a path which sins against every rule of scientific road-construction, and is bound to be carried away in more places than one during every rainy season. Mr. White, the Political Officer in Sikhim, is an engineer, and I should be sorry to be taken as intending to throw on him any blame for the state of the local communications. He has no doubt done his best *with the funds at his disposal*. The question I raise is whether these funds might not judiciously, and in the long-run economically, have been increased by a grant or advance from some other

source, if the Sikhim finances required it. Apart from any profit they might bring in by increasing the wealth and revenue of the District, the Routes to the Frontier may fairly be looked on as roads of more than local importance. A direct road up the Teesta, which must one day be made, will result in an enormous saving in distance, time, and labour. The Teesta bridge is 700 feet above sea-level, Chungthang is 5070 feet; four ascents, amounting collectively to 17,000 feet, are at present necessary in order to reach that village.

I have extracted these figures, not from maps, but from the last *Routes in Sikhim*.¹ For it does not seem to have occurred to the constructors of the Transfrontier Map that for military and practical purposes the altitude above sea-level of the lowest as well as the highest points on a road ought to be given. Where this is not done it is impossible for the officer or traveller to learn from his map what his day's march is likely to prove.

Captain and Mrs. Le Mesurier kindly proposed to accompany, or rather escort, us as far as Lachen, where we should have to leave the paths of men. This is a journey of less than fifty miles, but by local custom it is divided into five stages or days' marches, each march being marked by a bungalow or Travellers' Resthouse. As our party was too large to be accommodated in these shelters, it was agreed that the Messieurs Sella should go on forty-eight hours before us with Mr. Dover and half the coolies, and employ the spare time at Lachen in climbing for photographic purposes any commanding point that might attract them. Weather unluckily prevented them from carrying out this intention, and as they were debarred from sport by the

¹ The late Sir John Ware-Edgar in his *Report on a Visit to Sikhim*, 1874, suggested a light railroad up the Teesta Valley, and no doubt this will some day be made.

objection of the Tibetans to the taking of life in the neighbourhood of a 'Gumpa' or temple, they had, I fear, a somewhat dull time.

The rest of the party, glad, despite the delights of Gantok, to be once more on the road, started on the 13th September in the usual mists and showers of a Sikkim autumn. Hitherto we had been kindly dealt with on the whole by the weather, but during the next few days we were treated to a fair specimen of the hill rains. The path to the Penlong La (6250 feet), the first pass we had to cross, ran for four miles of very gentle ascent across a charming mountain slope. The forest was broken here and there by narrow gullies, each a vision of tropical luxuriance. Down them poured brimming streams, keeping, like those of the Casentino described by Dante, 'their channels green and cool,' now half hidden from sight under the tangle of quivering, glistening ferns and creepers, hydrangeas, spiræas, and bamboos, now leaping out in bright cascades which splashed us as we rode past. The near horizon was formed by the wavy, horizontal line of tree-tops on a neighbouring crest, above which shining masses of cumuli clouds marked the position of the great peaks they concealed—Kangchenjunga and Siniolchum. On the slopes opposite, a few patches of recent clearing, bright with crops, or brown where a thin column of smoke showed that the jungle was still burning, indicated that man was beginning to convert the flowery wilderness to his own uses.

Such agricultural enterprise and progress as there is at present in Independent Sikkim is wholly native and mostly in the hands of Nepalese. The Indian Government does not allow British tea-planters to establish themselves within the limits of the native State. The Lepchas are too easy-going a race to be progressive. It is a hard task to

help those who will not help themselves, and despite the efforts of the Political Officer to keep the Lepchas in possession of their ancestral lands, they are being gradually supplanted by the masterful Nepalese, a race of far greater force of character and appreciation of material advantages. The district is, for better, for worse, rapidly becoming Nepalised.

The forward view when we reached the gap did not present any strikingly novel features. As we penetrated farther into the range, the slopes grew longer and steeper, the scale on which the country was laid out became bolder, but peaks and precipices were still wanting. We overlooked another great basin, girt by forest-clad ranges, the streams from which converged in deep, water-worn channels. A few scattered brown huts on the shoulders of the hills were the only signs of habitation. Turning to our left, we plunged for four and a half miles down a descent of 3550 feet, into the ravine of the Dikchu,¹ a damp, steamy trough, choked by a glorious tangle of the green things of the earth, strange trees with bright red flowers, enormous convolvulus, clusters of giant bamboos, shrubs with particoloured leaves such as we grow as pot plants in hothouses. The hillside we had to climb looked like a sheer wall of foliage, and our path was at first very much of a ladder.

It was on the whole pleasanter, at any rate for novices in Himalayan mountaineering on horseback, to climb it on foot rather than on a saddle set at an angle of forty-five degrees on the back of a struggling pony. As we mounted, the steamy damp turned to heavy rain, and we passed the old monastery of Labrong under a downpour which prevented us from halting to receive the customary 'marwa' from the

¹ The following are official figures:—Descent from Penlong La to Dikchu, 3550 feet; distance, 4½ miles; ruling gradient, 1 in 7; ascent to Tumlong, 3850 feet.

monks, even though they blew their long temple trumpets and beat their drums to greet us as we passed.

Half a mile further we found the Bungalow. This Resthouse, says the Sikhim Road-Book, 'has three rooms, bathrooms, verandah, and outhouses.' I am ready to believe it has all this accommodation. My notes say 'a poor sort of leaky, cricketing-shed, furnished with some rickety bedsteads, broken chairs, and fragmentary crockery.' Probably the weather blackened our view, to some extent, of the shelter that received us; still I cannot believe that any sunshine would have effectually gilded over its slovenly state of disrepair, a condition unfortunately the rule at the time of our visit in the bungalows of Independent Sikhim. No doubt the climate is responsible for much. But there are exceptions, which prove that something depends also on the caretaker. We often found a feeble youth answering to that title. Surely if the village chief, or the head of the nearest monastery, were made responsible, there would be fewer dilapidations.

These criticisms may, I fear, seem to some readers ungracious. In so remote a region, it will be said, the traveller has no right to expect any accommodation. I readily agree, and gratefully admit the debt we owe to the Political Officer for his energy in creating adequate shelters. What annoyed me was to see his work spoiled by neglect. Want of a sufficient maintenance fund is the reason alleged for the decayed condition of roofs and floors. I cannot but hold that a Government which advertises these structures and makes a charge for their use ought to see that they are kept in a habitable condition. Under the present system, Mr. White's exertions in providing lodgings in exceedingly well chosen sites are in risk of being wasted. This seems to me false economy.

I raise this protest not without misgivings: I shall

probably be told that I am a fastidious globetrotter; the term is somewhat widely applied in India. I must bear the imputation as best I may, conscious that my experience of rough quarters, from ice-floored sheds and underground post-stations upwards, is at least equal to that of most of my readers. I have slept in Alpine huts and Caucasian hovels, in holes in the rocks and on cold moraines. It is not to inevitable hardship but to needless and wasteful squalor that I object.

I am not, at any rate, the first to make a similar protest: Sir Joseph Hooker has here, as elsewhere, fore-stalled me. I am tempted to quote his very trenchant picture of a Bungalow near Darjiling. 'The most sinister-looking resthouse I ever saw . . . hideous in architecture, being a miserable attempt to unite the Swiss cottage with the suburban Gothic, it combined a maximum of discomfort with a minimum of good looks or good cheer. I was some time in finding the dirty housekeeper in an outhouse hard by, and then in waking him. As he led me up the crazy verandah and into a broad, ghostly room without glass in the windows, or fire, or any one comfort, my mind recurred to the stories told of the horrors of the Hartz Forest, and of the benighted travellers' situations therein. Cold, sluggish beetles hung to the damp walls, and these I immediately secured.' Happy indeed is the naturalist who in such a plight can find comfort in a beetle!¹

Despite the continued rain we retraced our steps in order to take tea at the temple. The Labrong Monastery is a very complete specimen of a Buddhist Ecclesiastical Establishment. It stands, like most buildings in Sikkim, on a narrow spur from which the water can run off easily.

¹ I have lately received information from a local official that great improvements have been made in the last three years in respect both of roads and bungalows in Independent Sikkim, that postal services have been organised, and telegraph lines constructed up to the Tibetan frontier.

The monks live in a little street of thatched huts, which is lined with flag-posts and Chaits. At the farther end is the temple, a building similar in shape and construction to that at Gantok. The wall frescoes, however, seemed to me inferior in colour and design, and probably more modern. The porch was furnished with large prayer-wheels. The neighbouring hamlet of Tumlong, though spoken of in books as the former 'capital' of Sikhim, now consists only of some scattered farms and the crumbling walls of the late residence of the Raja, which was destroyed a few years ago by an earthquake.

Next day the weather was no better, in fact worse, and good for nothing but waterfalls. Our spirits sank, and I began to ponder over the gloomy suggestion made to me by Mr. White, when we first met in London, that I might very likely never see the snows at all.

The stage before us is described by Captain O'Connor in the Road-Book as 'terribly muddy and terribly slippery after rain,' and, as a whole, 'very unsatisfactory.' We can fully endorse these uncomplimentary remarks. Our weather was the more annoying because from the high ridge (8100 feet) we first crossed and then skirted, there must be magnificent views across the Teesta and up the Talung Valley to Kangchenjunga. I have an outline made on a subsequent visit by Captain Le Mesurier from the Samatek Bungalow which suggests a superb landscape. What we saw was all beneath us: dripping forest-slopes, the profound green abysses of the Teesta Valley, swathed in vast lurid sheets of moving vapours, distant crags and spurs, and one great rock showing blue and purple between the clouds. At the fifth mile—miles are very long in a lane four to nine feet wide, made muddy by the tramp of eighty men—we came on what the Road-Book calls 'a series of extremely bad slips, the rock consisting of friable mica and schist.'

The best description I can give of the spot at the time we passed would be *a moving hillside*. The whole surface of the mountain was more or less in motion ; mud was slipping and sliding in streams, among which rocks rumbled and tumbled at intervals in an extremely disagreeable and somewhat hazardous manner. Only the afternoon before a native gang had repaired the track for our passage, but the night's rain had rendered their toil of little account. Half an hour of spade-work was required to get our horses over the worst bits. But at last the passage was effected without any particular difficulty or accident to man or beast. Of course there is a certain risk in such places, but I would not exaggerate it. One is not, perhaps, in greater danger than in a ride in a hansom, and certainly in less than in a crowded crossing in Paris.

The rest of the road lay through what Anglo-Indians call 'jungle' ; but 'jungle' is only a synonym for forest. The next incident of a day which, owing to the weather, was on the whole the most melancholy and monotonous of our journey, was the crossing of a torrent, called the Rongrong Chu. A substantial bridge had been thrown over it, from which we looked down on the mad turmoil of water, foam, and spray. There are some rhymes of Southeys on a little cascade in the English Lakes which pretend to describe

‘how the water comes down at Lodore.’

At Lodore when I have seen it there has been little or no water to come down, but the pile of adjectives and present participles the poet has accumulated may serve to convey my impression of the Rongrong Chu as we saw it in spate, a superb cataract rushing down a cloven ravine over which pale hydrangeas dripped, while the grey lichens on the nodding trees were shaken by the perpetual blast.

The situation of Samatek rouses even the matter-of-fact



THE FOREST NEAR TUMLONG

Road-Book to the exclamation, 'A magnificent view.' It must be ; but from us it was completely veiled. My only recollection of the hours we spent there is of much drying of clothes, and in the morning, of glimpses between the rainstorms up a deep valley into which the mountains sank in splendid curves, buttress behind buttress, very green in the foreground, deep blue in the distance, the whole cut off and roofed by a canopy of cloud, through which watery gleams pierced only at rare intervals.

The Bungalow of Samatek (6961 feet) is a solitary house in the forest at a great height above the river. Lower down are villages, of one of which our future guide, Rinsing, was the head or Kazi, and here he rejoined us. In this neighbourhood two adventurous Englishwomen established themselves for some years as missionaries, travelling much about the country, and doubtless helping to introduce some rudiments of civilisation among the remote hamlets.

A very bad track branches off from this point up the Talung Valley to the Guicha La and the eastern base of Kangchenjunga ; and another, trending more northwards, leads up a side glen to the Talung Monastery, and over the Yumtso La to the Zemu Glacier. Mr. White and his companion, Mr. Hofmann, are the only Englishmen who have trodden it. We had been warned that it would be rash to discourage our coolies at the outset by so strenuous a march, and consequently kept on the Lachen Road up the main valley, hoping to gain the Zemu Glacier from that direction.

Above Samatek the Teesta Valley bends, running for a few miles N.E. and S.W., instead of roughly N. and S., and the scenery undergoes a change. The nearness of the great mountains begins to make itself felt. Precipitous cliffs break the smoothness of the hillsides, the ridges rise

above the forest level, and lift bare bluffs of rock against the skyline. The track, a terrace high above the cataracts of the river, circles round deep wooded bays, in the heart of which the foaming torrents that have hollowed them continue their ceaseless labour. Nothing can be imagined more romantic in mountain landscape than these frequent recesses in the hills whence sheets of broken foam break out through the unimaginable foliage of the virgin forest ; where not only is every inch of soil fought over by flowering weeds and shrubs, but every forked bough or hollow trunk is seized on by parasitical ferns and orchids, wreaths of ferns and plumes of orchids. The day was grey, the air still and warm ; we rode under long arcades of bamboos or the moist shade of broad-leaved plantains. Presently our path skirted the naked cliffs of a bold bluff or promontory, from which we looked down on the foaming river many hundred feet below. In the general character of the rocks and slopes the defile resembled, only on a much more magnificent scale, some of those in the Grisons—the Schyn or the Aversthal—but the vegetation was of a very different character to anything in the Alps. There is none of the stiff primness of Swiss pine-forests about the woods of Sikkim. Before reaching the Toong Bungalow (4400 feet), which stands a little above the road, we crossed some recently cleared ground. A day's journey of seven down-hill miles seemed hardly enough even for our coolies, and the next stage to Chungthang being only six miles more, we halted but a short time for lunch.

A few zigzags brought us to the Teesta, which we crossed by a substantial iron bridge. The road hence as far as Chungthang runs along its right bank. The valley soon bent again due north, and the first great change in the character of the vegetation made itself felt. Begonias and spiræas were replaced by raspberries and white anemones.

Many European species made their appearance, and yews and rhododendrons gave a new aspect to the forest.¹ The path kept close beside the noisy torrent, occasionally climbing over a cliff, or cut in the face of a spur. Fine specimens of the characteristic swinging rope-bridges of the Himalaya were passed (but not crossed) from time to time.² In improving weather we reached the end of our day's march, Chungthang (5070 feet), the Stalden of the Teesta Valley, where its two head-waters, the torrents of the Lachen and Lachung Valleys, unite. This is a point of some strategical and political importance. The monastery here was the head of the wedge driven by Tibet into Sikkim. Its abbots exercised jurisdiction over the Tibetan villages of the upper valleys. The last of them proved too Tibetan in his sympathies during the late war, and disappeared at its conclusion. The monastery has been suppressed and deserted, and its upper rooms are now converted to secular purposes and used as a guest-house for the few passing travellers. They are bare lofts haunted by many draughts; they are believed also to be haunted by the tutelary deity of the place, who rejoices in the title of 'The Diamond Lady Sow,' and, according to Major Waddell, can assume the appalling form of a woman with 'three heads, one of them a sow's, while her character is that of a bloodthirsty and vindictive she-devil.'

The Lachen and Lachung torrents meet among swampy meadows; the monastery and the few cottages which constitute Chungthang stand on a bluff above them; on its slopes are some patches of rice, Indian corn, and millet. Garwood, always eager in the pursuit of butterflies, lingered in the meadows, whence he returned laden with lovely

¹ See Hooker's *Himalayan Journals*, vol. ii.

² The very bad track described in Major Waddell's volume (from which I have borrowed information, here and elsewhere) is the old path on the left bank of the Teesta, now abandoned.

victims, but himself victimised by the leeches which abound in the long grass and assail any one who leaves the beaten track. So long as we kept to paths, we did not suffer, and fortunately before we left the region of paths and had to wade in long grasses, we had passed above the zone of these troublesome pests.

When we issued from our uneasy slumbers in the wind-swept, if not demon-haunted, loft, the sun was already climbing over the tops of a fine range of peaks, rock-needles planted on snowy pedestals, on the eastern flank of the Lachung Valley. We recognised a glacier ; the sight was inspiring ; we felt for the first time that we had arrived at our goal, that we had reached the snow mountains. It was necessary to halt for a day, to give time for the return of the coolies who had carried up some of the goods of the first detachment of our party. Garwood and I determined to spend it in riding as far as we could up the Lachung Valley, of which Mr. Blanford and other travellers have given inviting descriptions. Our ride, however, came to a speedy end. We had not gone two miles when the path was cut by the divagations of a torrent, which had raised across the hillside two great embankments with a ditch between them impassable for animals. We dismissed our syces, and proceeded on foot. The path followed the banks of the main torrent, and, as we watched its impetuous fury, we were reminded of the fate of Sir J. Hooker's favourite dog, who fell from one of the swing bridges at this spot. Very soon we were brought to a standstill ; the track broke off suddenly between an upright crag and a swirling pool. Our native companion extricated us from the dilemma by clasping a long vine tendril which served each of us in turn as a rope to scale the rock. There are certain travellers who, with the aid of a camera, might have made a good deal out of this temporary obstruction. In reality there was nothing

to stop a schoolboy. Another scramble brought us down again to the usual path. The Road-Book assures me that soon after our visit some more circuitous passage was provided for animals. The next bit of the walk was dull; we were buried in the high brushwood that grew on the old river-bed. When we came to a trickling stream, we sat down in the shadow of the forest to eat our lunch. Here Garwood, who was suffering from his leech bites, remained behind while I climbed a step in the valley caused by a vast mound, possibly the terminal moraine of an ancient glacier, which stretches across it.¹ On its broad top are some maize-fields, from which there is a splendid view up and down the open valley. The wooden huts of a large straggling village, I believe Lachung, were visible at no great distance in front. I went on until the road and river rejoined, and then, as there was no more to be seen without a very considerable extension of my solitary excursion, turned back to find that my companion had been pursuing his geological studies by looking out for a stone soft enough for a pillow! The day was fine and warm, but not hotter than many I have spent in Italian valleys.

The Lachen Valley, up which our next and last stage on the Tibetan Road was to lead us, is in its lower portion far more savage in scenery and less practicable for traffic than the sister vale of Lachung. Until by the exertions of Mr. White a new track was made through its defiles and a suspension bridge built in the very centre of the gorge, it was hopelessly impassable for horses at all times, and at many seasons even for laden coolies. The upper villages were consequently more closely connected with Tibet than with the southern portions of Sikkim.

¹ The view 'Looking down the Lachung Valley' in Sir J. Hooker's work shows this spot, and indicates that the valley above it has, in comparatively recent times, been filled to a considerable depth by a glacier.

The rain had again fallen all night and the morning was damp and misty. The stage before us is long for coolies, and the difference in height between Chungthang and Lachen (3730 feet) by no means represents, owing to the frequent ups and downs of the road, the number of feet to be climbed. In the defiles below Toong the scenery had been varied and romantic. The cleft we now entered was wilder and more tremendous. The channel cut by the waters falling from the great glaciers north of Kangchenjunga was strangely narrow, and its smooth green walls rose at an astonishing angle until they were lost in the mists. The V-shape of this part of the ravine is very marked. It is of a type rather Pyrenean than Alpine. I venture to think that the preservation of the convex curves of the hillsides is in part at least due to their thick coating of forest. Were the valleys of Sikhim denuded of their cloak of verdure, the slopes would in a few centuries become far more broken.¹

About the thickly inhabited valleys of the Swiss Alps there is, most travellers will admit, an air of kemptness; about the pinewoods, a certain austerity and monotony that is the reverse of what we commonly call picturesque. It seems most in accord with the spirit of mountain scenery that Nature should be allowed to have very much her own way. With the Swiss she does not get it any further than they can help. The Alpine peasants are far too good managers to let her capabilities run to waste. A chapter might be written on the influence of political institutions on scenery. With a race of small proprietors Nature has no chance, as in a land of large domains, of keeping corners to

¹ I ought perhaps to forestall the possible objection that the slopes of the highest valleys above the forest region are, as a rule, by no means broken and precipitous. A reason may be found in the fact that they lie in the zone where the torrential rains are, for six months in the year at least, turned into snow, and for the remaining months into Scotch mist.



THE TEESTA VALLEY - ABOVE CHUNGTHANG

herself. The valleys are cut up by walls and hedgerows, the streams are dyked, the forests are managed by the community on strictly commercial principles ; the scythe spares no wildflowers it can reach even at the risk of its wielder's life. Modern democracy is a determined enemy of the picturesque. It is not needful to go far for instances. Scotland is in many respects a far wilder country than Switzerland ; in the Pyrenees the vegetation has a natural luxuriance, and the beech and chestnut woods, always pleasant substitutes for the pine, show no trace of commercial management. In the Central Caucasus man's works only serve to emphasise the scale of the scenery ; they in no way alter its character. In Sikkim man is conspicuous by his absence. In regard to the romance, the variety, and the primæval aspect of its landscapes, the country is at the opposite end of the scale to Switzerland.

In the Eastern Himalaya the approaches to the snows lie not through austere pine-woods but amongst the most luxuriant forests. The profuse beauty of the Sikkim forests strikes the Alpine traveller as something fantastic and fabulous ; the mountaineer accustomed to the woods of more temperate zones wanders through them almost believing he is in a dream. In the long stage (13 miles) above Chungthang, the forest, if it loses little in richness, changes its character—it ceases to be sub-tropical. The traveller passes from the flowers and vegetation of the foothills to those of the mountains. Bamboos, plantains, magnolias, and hydrangeas gradually become scarce and disappear. European species make their appearance. Tree rhododendrons, thirty or forty feet high, thrust their red twisted stems across the track, or form a fence between the rider and the precipice, the 'Kud,' to fall over which is the only form of 'mountaineering accident' known to Anglo-Indians. Conifers predominate, spruce and juniper, silver fir and

Himalayan larches, a variety less symmetrical and more graceful than our domestic species, tower up above the deciduous trees; beards of lichen waving from their branches take the place of the festoons of convolvulus on the trunks of the oaks and chestnuts of the lower valleys. Birch, ash, walnut, alder, and hazel show their familiar foliage. Another sign that we were entering a temperate clime was that we had recovered the seasons. Eternal summer had been left behind, brilliant tints broke the monotony of the forest: we became conscious of autumn.

The new path on the left (E.) bank of the stream climbs again and again to the top of high cliffs only to return to the level of the water. In many places it is little better than a staircase, but a staircase most of the flights of which are within the powers of a Sikkim pony: his rider, however, may be well advised to remember that in case of accident there are but few landings to arrest a fall!

Splendid cascades, foaming and rushing down through the green walls of forest, are crossed. The Himalayan torrents are a perpetual delight to the eyes, and some compensation for the climate that creates them. They carry with them no ugly ruin, their brimming waves are closely set in dense verdure, even the boulders that emerge from their beds are half covered with lichens and mosses.

After climbing high among the rhododendrons we plunged by steep zigzags to a light suspension bridge flung across the Teesta in the very heart of the defile (7275 feet). The wire parapets were thickly hung with offerings, scraps of coloured stuffs, and slips of paper containing prayers for a safe journey, such as are found everywhere in the Tibetan border-lands at any spot—crest or bridge—that marks a stage in the pilgrim's progress. On the road we met several parties of wayfarers; broad-

faced, thick-robed peasants from the upper villages. At our approach they broke into broad smiles, and lolled out their tongues in hearty greeting, most of all for Mrs. Le Mesurier, who was paying her second visit to their remote hamlets, to which she was, I believe, the first European lady to penetrate. The last party formed a deputation, and came provided with the traditional token of peace and goodwill, in the shape, not of a silk scarf, but of a paltry muslin rag.

Two miles beyond the bridge the green walls of forest fell back, and the road began to climb a high bluff that closed the valley by some singularly ill-constructed zig-zags, far too steep in places—‘ precipitous, rotten, and damp’ are the energetic expressions of the Road-Book. This ascent marks the upper end of the defiles and the beginning of a comparatively open region. It corresponds in character to the ascent above Ceppo Morelli in Val Anzasca, or that above Peccia in Val Maggia. The broad virgin meadows on the top, where an uncut and uncropt Alpine flora was running fast to seed, were *mutatis mutandis* very much of the character of the alps of Fusio. Only a few white anemones, ranunculuses, and large daisies (or a flower that looked like a daisy) remained to suggest what the richness of the carpet must have been in early summer.¹ From this down or alp there is a beautiful view southwards down the gorge, while in front the valley becomes more open, and in fine weather, no doubt, snowy peaks are visible. The spot is admirably suited for the site of a substantial bungalow which would be a pleasant health resort, and when the forest track through the Zemu glen has been cleared, as it must be as soon as the glacier scenery of Kangchenjunga attracts official notice, it would

¹ See Hooker’s *Himalayan Travels*, vol. ii. pp. 45-46, for the flora of the Lachen Valley.

be within one day's ride of the ice. Our path continued over the flowery meadow-land, descending to cross a side stream, and then rose gently, till from a corner covered by a fine group of firs and larches (*Laryx Gryffithii*, the only Himalayan larch) we saw close at hand, under the low roof formed by the mist across the valley, the scattered cottages and monastery of Lamteng, or, as it is more often called, Lachen (8880 feet).¹

¹ I extract from the excellent *Routes in Sikkim*, compiled by Captain O'Connor, the following 'Notes on the Lachen Valley' —

'Population, 300 to 400 men, women, and children (Bhutias). Number of houses —Lamteng, 60 ; Tellum Samdong, 15 ; Yathang Ka-Lep, 17 ; Tangur, 20. Below Lamteng there are no proper houses. The inhabitants live at Lamteng in November and December ; they then go down the valley to the villages of Latong, Tumlong, Denga, and Guema.' [These are the villages in the lower Teesta valley or basin] 'They return to Lamteng for April and May, and then proceed up the valley to the higher villages, where they remain till November. The cattle in the valley are : yaks, 400, of which 200 carry loads. In the winter 100 remain in Lachen, and 300 go over into Tibet. Cattle 40, ponies 100, goats 30. Agriculture is nearly unknown, the people devote themselves practically to their yaks and cattle. They grow, however, potatoes, turnips, and a little buckwheat.'

'Comfortable Bungalows,' Mr. Dover informs me, have been erected since my visit at Lachen and Thangu.



THE APPROACH TO LACHEN

CHAPTER VI

THE ZEMU GLEN AND GLACIER

DESPITE the moisture outside, we spent our last evening under a roof very cheerfully, consoling ourselves with the fond belief that the rains had reached their statutory limit, and that fine weather was bound to follow. The local news was on the whole encouraging. The villagers made no question but that our Gurkha pioneers would succeed in cutting a practicable track for us through the forests of the Zemu up to the glacier. They had already gone ahead to do so. Thus the first difficulty in our path—the tangled wilderness, which fifty years before had stopped Sir Joseph Hooker, and had in 1883 proved a serious obstacle to the Surveyor, Mr. Robert¹—seemed to be already in a fair way to be overcome.

As usual the rain poured pitilessly all night. We woke to find our camp a quagmire, through which we had to wade to breakfast in the 'Godown.' Clammy mists hung low on the mountain-sides, the great pines (*Abies Brunniana*) which adorned the pastures surrounding the village dripped incessant moisture. Our readiness to quit paths and roofs in order to plunge into the wilderness was not abated, but the exhilaration ordinarily felt on leaving a

¹ 'Mr. Robert made his way for a considerable distance up the streams which drain the eastern face of the Kangchenjunga group, experiencing the same difficulties and hardships described as being met with by Hooker in that locality. The dense growth of stunted rhododendron in the Zemu Valley was found to be a very serious obstacle.'—Colonel Tanner in *Survey Reports*, 1883-4, p. xxix.

horse-track and becoming a free biped, the delight with which a traveller grasps his familiar ice-axe, and, once more a mountaineer, rejoins the higher branch of the profession, was sensibly diminished. Morally as well as physically, we were, for the moment, somewhat damped.

'After a farewell breakfast round the fire in the 'Godown' with our hosts Captain and Mrs. Le Mesurier, we took leave of them with very grateful hearts. Their good offices, however, were far from being at an end. For a week they remained at Lachen, keeping us in touch with the outer world, forwarding supplies, letters, and even newspapers to our Zemu camps. Most important service of all, they formed an obstacle not lightly to be faced by any of our coolies, who, after the manner of their kind, might wish to attempt a sudden stampede from the wilds into which we were about to lead them, and the snows they were soon to be called on to encounter.

The first muster of our baggage-train—some fifty men—was, despite the weather, an impressive spectacle. In place of umbrellas they planted over their backs and burdens large wicker shields, which gave them when seen from the rear the appearance of a party of animated fire-screens mounted on legs. The various sirdars, in quaint conical hats and gay red and green cloth boots, wearing on their chests large silver amulets containing either written charms or tiny figures of Buddha, were busy marshalling their companies: long-haired, lean Lepchas from the villages of the Teesta Valley, stout-limbed, broad-faced Bhutias from the Darjiling Bazaar, Tibetans from Lachen itself.

Having watched this mixed company set out, we mounted our horses, intending to ride the three miles to Zemu Samdong, the Zemu Bridge. There we should leave the new bridle-road which runs along the upper Teesta to the Tibetan post at Giagong. This place is

two days' march distant. It lies at a height of 15,800 feet, several miles on the southern side of the watershed, where the bleak bare downs amidst which the Teesta has its sources are contracted between the spurs of Kinchinjow (22,720 feet) and Chomiomo (22,385 feet). It would appear that according to treaty the Tibetans have no business there; they have, however, built a wall and apparently mean to stay, unless a British force comes to turn them out. It seems not impossible that, like other squatters nearer home, they may make their title good by length of occupation.

We had hardly ridden two miles when strange sounds caught our ears, the noise of falling waters mixed with that of colliding stones. In the channel proper to a trickling brook we came on an opaque torrent, carrying down with it mud and boulders. The breadth of the moving mass was only a few feet, but it had already cut in the hillside a deep groove, which was altogether impassable for horses. Some of us accordingly went to the front with ice-axes, and soon pounded out steps passable for the coolies, all of whom were fortunate enough to cross without any accident from the tumbling stones.

This little incident over, we watched our syces and their animals turn back towards their homes, and then strolled on foot to the Zemu Bridge, a substantial construction recently built on the cantilever system. It was here that Sir J. Hooker found a string drawn across the old bridge, and was warned that by removing it he was violating the frontier of 'Cheen.' At one time the Zemu River was considered the boundary between China and Sikhim, and some of the Tibetan officials seem to have been disposed lately to revive the old claim. As I have already mentioned, Mr. White was unwilling in 1892 to authorise an official botanist to go up the Zemu into

Lhonak. Lately, however, stimulated possibly by an energetic Viceroy, the local officials have resumed their explorations, and last year (1902) Mr. White himself, at the head of a large party, perambulated the greater part of Lhonak. Unfortunately the geographical world is still without any details of his adventures and discoveries.

On the further bank we collected our forces before leaving the Tibetan road and making our first plunge into the damp depths of the forest. The immediate prospect was most uninviting. Under the trees grew a dense scrub; the only vestige of path was the track left by our Gurkha pioneers, who had been sent ahead to open, or blaze, a way. It was drizzling; wet branches flopped in our faces; we found ourselves constantly either tripping and slipping over hidden stones, or wading ankle-deep in quagmires, or climbing up and down precipitous mud-banks, on which roots served as ladders. The great mountain slopes rose steeply on either side of the narrow trench we were pursuing. The darkness of the sky was deepened by the shadows of the great wood, or the still more obscure gloom of rhododendron thickets. The roar of the rushing torrent was always in our ears. This monotonous toil lasted for hours, so that it was afternoon when we reached a spot where the valley widened and divided. One branch, trending north and rising steeply, led to the uplands of Lhonak; the other, running nearly due west, would take us directly to the Zemu Glacier and Kangchenjunga. On a spacious clearing we found an extemporised signpost put up by our pioneers to warn us not to ascend the wrong valley. We were, I believe, on the terrace where Hooker camped (10,850 feet), and found himself in spring 'surrounded by a luxuriant vegetation of most beautiful rhododendrons in full bloom, white rose, white flowered cherry, thorn, maple, and

birch.' We turned to our left and soon reached a bridge over the Lhonak river, just above its junction with the Zemu.¹ Its banks were shrouded in a prodigious entanglement of rhododendron thickets, through which we were guided by occasional blazed stems and broken branches. The view from the bridge itself furnished a splendid subject for our photographers. The river was a continuous rapid flowing between walls of glistening verdure. Red rhododendron branches, twisted and writhing, draped with long beards of grey lichen (*Usnea barbata*), overhung the leaping foam, and swayed in the cool blast brought down by the icy stream.

The day was still not far spent (though we had already passed Sir J. Hooker's second stage) when we came to an open glade covered with knee-deep grasses, in the centre of which a pillar of smoke curled slowly upwards into the moist air. It was the camp of our pioneers. Our little tents were soon pitched, and under their shelter we were dry and by no means uncomfortable. Close by was a rough hut, used by the Lachen peasants, who now and then force their way up these glens in quest of the edible roots of an arum lily, which they bury in the ground and dig up afterwards for winter's consumption. We passed some of their *caches* on the next day. The roots produce a fibrous mess which is boiled and eaten. It does not appear to be a very desirable article of diet, since, according to Sir Joseph Hooker, 'it produces bowel complaints and loss of the skin and hair.'

Once more it rained all night, but in the morning the mists only shed an intermittent drizzle. From time to time the shoulders of the mountains, steep forested slopes and bare cliffs, loomed blue and immense through the rifts

¹ These two streams have been often misnamed in the literature of Sikhim. Sir J. Hooker called the Zemu Chu the 'Thlonok,' and the Lhonak stream the Zemu.

in the vapours. The bottom of the glen became more broken as we advanced. Our leader kept on making, without any apparent reason, eccentric climbs and plunges up and down sudden and almost perpendicular banks. Presently we were checked by a lateral torrent, the Tum-rachen Chu, which crossed our track. Our guides here became divided in opinion and led very uncertainly. After much hesitation and several failures, we at last found a rickety plank bridge, and on the further bank some rude log shelters and shallow trenches for burying the lily roots. After a very rough scramble we got back to the main stream at a place where a new bridge spans it. Here a long consultation took place. The bridge had, as I understood, been made to allow access to the Yumtso La. We might probably have gained time by crossing it. We did however as we were told, and scrambled along the left bank in a long-drawn-out procession, until the coolies considered they had done enough, and we were compelled to halt for the night among small boulders sufficiently uneven to satisfy even the most self-mortifying saint in search of a couch.

The view up the valley in front was closed by a slight bend in its direction. Opposite our camp towered massive cliffs streaked by waterfalls, cleft by avalanche channels, and capped by glaciers, dimly seen through the mists. These formed the base of Lama Anden (19,210 feet), the easternmost summit of the Kangchenjunga Group, which is separated from its loftier neighbours by the broad gap of the Yumtso La. The forest had thinned; small groves of conifers, the last trees we were to see for three weeks, dotted the slopes. The rhododendrons which spread in masses over the surface of the ground no longer displayed the strong contorted trunks of the lower groves, but were shrubs of the dimensions and growth commonly found in

English parks and gardens. At this season all blossom was of course over, yet the hillsides were far from monotonous. Ripening seeds and withering leaves stained the slopes with the reds and browns of autumn. The rocks were everywhere clothed with grey lichens and mosses. Even in the leaves of the rhododendrons there was much variety, some of the species displaying a blue-green hue of the tone affected by art furnishers. Under the dull canopy of sky the wet colours had a singular depth and transparency. There was opportunity for a painter.

The night was a repetition of the previous four. Drizzle, drizzle, drizzle! In the morning the old slow march of animated fire-screens in single file began again. The last forest trees, firs, were soon left behind. But in the open there was no kind of track. We stumbled about among stones hidden under long grasses that gave the flat boulder-strewn ground beside the torrent a deceptively even appearance. At last we arrived at the bend in the valley and saw before us, close at hand, a most exciting and suggestive, if by no means beautiful, object: the snout of a great glacier, foul with moraine. The slope of the ice was too rapid to allow any glimpse of the snows at its head. For that we were content to wait, it was enough for the moment to know that we had reached the ice of Kangchen-junga. A high mound, a curiously exact reproduction in outline of that below the Roseg Restaurant in the Upper Engadine, either a 'Bergfall' or an ancient moraine, jutted out from the northern hillside.

We now found ourselves close to the ice-caves from which the main torrent of the Zemu (sometimes called the Poki Chu) issues. The whole mass of ice and rubbish impinges violently against the northern hillside, scouring its lower slopes. To pass in this direction would be a work of great labour, and perhaps some risk from falling

boulders. On the south side of the glacier, however, between the moraines and the buttresses of the Siniol-chum range, room is left for a narrow trough, out of which flows an insignificant stream. We were obviously on the wrong side of the river, and the snow-bridges found by Mr. White in early summer were not at this season available.

Just as we were beginning to contemplate the disagreeable possibility of having to return to the bridge we had neglected on the previous day, our attention was drawn to two enormous erratic blocks, which, inclining together in their upper portions, so nearly met across the raging torrent that by heaving a large stone into the gap we could completely close it and make some sort of a bridge. The structure had, however, a considerable defect. The farther boulder rose perpendicularly some ten feet above our keystone. Two acrobats might have helped one another across with a rope, but for a troop of laden men the feat was impracticable. We quickly cut some wood from a last straggler of the forest, and a Sikkim pioneer, standing on the stone, fixed planks at a higher level across the gap. The first man was given a back up, and then with a push behind and a tug in front the coolies were without any great struggle conveyed over in succession. The scene was most lively and entertaining for the spectators. Rinsing in Chinese costume, statuesque on a pinnacle, shouting orders, formed a striking contrast to Mr. Dover in white flannels bustling about and lending a hand in the transport of the clumsier loads. This first manœuvre resulted in the passage of the torrent, but it planted our troop on a perch or pedestal, to descend from which needed some agility. For the moment the men clustered like a flock of birds on the mighty stone that had been carried down from the cliffs of Kangchenjunga to serve our base uses. The further engineering required was, how-

ever, of a simple character ; a few stones were piled against the vertical face of the rock where it was lowest, the rope was used as a handrail, and after long delays the whole of the party and their packages were safely landed among the dwarf rhododendrons on the right bank of the Zemu. A little plain hard by was covered with traces of the recent passage of yaks. We had touched the 'high level route' connecting Lower Sikhim through the Talung Valley with Tibet. The line taken by this track—it cannot be called a path—is very characteristic of this part of the Himalaya. It crosses three ridges, the Yumtso La (15,800 feet), the Thangchung La (16,333 feet), and the Thé La (16,752 feet), before it reaches the watershed and the fourth pass leading into Tibet, the Naku La (17,300 feet).¹ Only some twenty miles further east the Teesta runs parallel to its course, and by following the valley road the traveller can reach the same region by crossing only one pass, the Kangra Lama La (16,400 feet). These passes, taking Talung as the starting-point for the first, involve ascents of roughly 7000, 5000, 2500, and 3000 feet respectively. In easiness they are about on a par with the Bernese Scheidecks, and, like them, in the summer they are grass passes. In Sikhim it is not on the open slopes above the forest region that the chief difficulties of the roads are found, but in the cloven ravines, where the incessant rains of summer drench the hillsides, until the saturated soil begins to slide away in great landslips, carrying the path with it ; where the traveller climbs out of one steamy abyss only to drop over the ridge into another ; where the principle that has guided the native pathmaker seems to have been 'the longest way round and the steepest way up are the shortest way anywhere.'

¹ 18,186 feet by Mr. White's 1902 measurement. But see note on Mr. White's heights, p. 140.

This particular route serves chiefly for the transport of salt and timber: salt out of Tibet, timber into it. It crosses the Zemu Glacier above its snout, much as the route of the Gries Pass in the Alps crosses the glacier of the same name. But with this exception it presents no kind of difficulty to laden beasts. Ascending steeply we followed faint tracks, soon lost, which led into the glen or hollow on the southern side of the Zemu Glacier, and then, bearing to our right, climbed several ancient grass-grown moraines, until we found ourselves close to the edge of the retreating ice. By the time our men had come up, it was too late to cross the glacier that evening, so we looked out for a site for a camp.

There was very little suitable ground, but we settled on a sheltered hollow between the rocky ridges, where by partially draining some shallow pools and removing small stones we could provide a smooth floor for our tents. We had climbed some 1500 feet above the river sources. Looking backwards there was a fine view into the blue valleys below us and across to the cliffs and glaciers of Lama Anden. The height of our camp was 13,900 feet. Garwood was out-of-sorts, but no one else had any symptoms which could be attributed to altitude.

At sunset the weather had given signs of improvement. When I threw back the tent flaps at dawn, blue sky indented with silver points was visible at the head of the glacier. Thrusting my feet into my unlaced boots, I rushed up the steep bank of loose moraine and out on to the bare ice. A few hundred yards from camp I found a swelling mound which overtopped its immediate neighbours and commanded a view right up to the snows. Kangchenjunga I soon discovered was out of sight round a corner; the peaks in view were part of the ridge north of it that separated us from Nepal. I looked out for, and soon

recognised, the 21,000 feet gap of the Government Map.¹ As far as could be seen at the distance (about thirteen miles), the final ascent to it promised to be over swelling slopes of moderately crevassed névé not likely to present any very serious difficulty. I had some moments of considerable elation, almost persuaded that our luck was about to turn. Sunshine and mountain air are very effectual aids to a sanguine disposition. We had come out of the climate of a Devonshire combe into that of the Upper Engadine.

After examining technically the snowy ridge at the end of the vista, I turned to regard the scene as a whole. It was my first view of a great Himalayan glacier. It was not an impressive view, for none of the greater peaks were in sight. The huge grey billowy stream flowed towards me in an almost straight line from its still hidden reservoirs under Kangchenjunga. The moraines were not ranged in lines, but were more or less all over the place, giving some excuse to the official cartographer, who declined to recognise the glacier below. The snowy crest that framed it on the south was a spur of Siniolchum, the peak of which was hidden; the rocky slopes below the Thangchung La bounded it on the north. Its width must have been about a mile; its slope was sufficient to diminish the effect of its length. Combine the dimensions of the Aletsch Glacier with the dirt of the Zmutt Glacier, and the product will be a fair picture of the first aspect of the lower portion of the Zemu. Though the greater part of the surface was covered by a cloak of brown and grey rubbish, wherever the mounds showed steep faces white ice shone through. We were on a living glacier, and not, as the map suggested, on a dead moraine.

¹ The photograph on p. 235 of Major Waddell's book does not, as stated, represent this gap, but the 19,300 feet gap east of Kangchenjunga, seen from below the Guicha La.

An artist might have been more tempted by the view in the opposite direction, down the valley. The little glacial pools reflected the white cluster of tents pitched between them, and the rising smoke of our camp-fires was thrown up against the dark tints of the westward-facing forest slopes, which, still in deep shadow, overhung the long gorge over which we had prevailed. In the distance the snow on some steep rock peaks, situated between the Lachen and Lachung Valleys, which fenced in the landscape, was just catching the welcome sunbeams.

Had we had a competent local guide we should have crossed the glacier from this spot, following the course taken, as I believe, by the yak caravans. But there was a natural disposition on the part of our leaders to put off the passage and to take advantage of the inviting trench on our side of the ice. We traversed the loose faces or stepped daintily along the narrow crests of the monumental moraines, and then walked up half-dry water channels and across level basins enclosed between the glacier and the rocky hillside. How the time passed I do not quite know; no doubt we waited much for loiterers, but it was afternoon before we came to the point where the first tributary glacier from the southern range that is large enough to reach the trunk stream threw itself as an obstacle across our path. It was now obviously advisable to cross to the northern bank. Unkind mists had again obscured the sky and suddenly enwrapped us in a dense fog. We steered by compass, now and again notching a few steps in a steep slope of bare ice, through a dreary chaos amidst vast mounds and hollows, containing pools of milky water. After what seemed in the viewless obscurity a long time (for the expediency of keeping our men together made our march slow), the opposite mountain loomed through the vapours, and we

got our caravan off the glacier on to solid ground without any difficulty.

Between the moraine and the mountain we found a convenient trench, similar to the one we had left, and also provided with a stream. This water has a curious history. A little lower down, where the ice leans heavily against the northern hillside, it is engulfed under the main glacier, from which it reissues at its foot.

Our tents pitched, we proceeded to discuss our plan of operations. Their first introduction to ice had naturally made an impression on some of the coolies. There were dawdlers in the rear who had to be waited for, there were invalids who would be better sent back. It seemed judicious to divide our forces, in order to lose no time in beginning to make reconnaissances. We determined to leave Mr. Dover in command of a base camp, while with a dozen picked men we moved on at once to the higher camping-ground reached by Mr. White and Mr. Hofmann in 1891.

Next day mists still hindered any general view of the great peaks which we knew surrounded us, but the weather was dry, the temperature agreeable, and the air felt delightfully fresh and bracing after the damp warmth of the forest region.

On our left was the moraine, like a huge railroad embankment; on our right cliffs and steep slopes, which after a time receded and left room for a stony amphitheatre, watered and scarred by the drainage from secondary hanging glaciers which filled the hollows between the splintered crags of the northern range. Alpine flowers now greeted us. Clusters of edelweiss excited our Piedmontese guide. Large gentians in form like those of the Alps, but Eton instead of Harrow blue, were abundant. After mounting a broad, gentle incline and passing beneath

a rocky spur we found ourselves on the verge of a large pasturage, or *maidan* as Asiatics call it, sloping slightly towards the moraine and covered by flowery grass, wherever the straggling streams had not streaked its surface with pebbles.

We could not yet see the tarn Mr. Hofmann had told me of, but a recess under the grassy moraine, well sheltered from the valley draughts by several low mounds, seemed to offer such snug quarters that we determined to pitch our tents in it. The height, as determined by several observations, was 15,139 feet. Some mountain goats were in sight on the hillside, and Garwood with a hunter started in a pursuit which proved fruitless. The day continued cloudy, the peaks were veiled, but the weather on the whole looked less unpromising.

The next morning our patience was rewarded. The mists had lifted and revealed to us for the first time the walls of the great amphitheatre at the head of the Zemu Glacier. We were face to face with Kangchenjunga. On our left rose the rocky buttresses and tributary glaciers of Little Siniolchum; on our right was a bold sugar-loaf shaped summit. Our camp was too much under the moraine for a satisfactory view, and we hastily debated how best to spend that hitherto rare boon, a fine day. Signor Vittorio Sella naturally preferred to seek a photographic standpoint. Garwood, somewhat indisposed, fancied a stroll after wild goats. He was generally our only sportsman. Having found on previous expeditions that sport is not easily combined with mountain climbing and mapping, we resolved to neglect it except in so far as it might help our commissariat. Our bag was confined, therefore, to a few burhels and musk-deer. But the sportsman in Sikkim, according to Lieut. Vickers, 'may bag two kinds of bears, chamois (*Gooral*), musk-deer,



KANGCHI JUNGA FROM GREEN LAKE PLAIN.

barking-deer (*Khakur*), wild pigs, jungle fowl, monaul pheasants, snow partridges, and pigeons.'¹

In the Alps a spot such as that on which we were camped would have swarmed with marmots. We saw very few during our journey. Probably the premature snowfall had disposed them to their winter sleep. From time to time we came across some of the large tailless rats, to shoot which, in the belief of the natives, brings on storms and tempests.

My part in the day's work was to go up the glacier with Maquignaz, as far as time would allow, examine the ranges at its head, and select, if possible, a site for a still higher camp. My general plan, or purpose, at this time was as follows. In the first place to climb any convenient and accessible peak of from 20,000 to 22,000 feet in order to reconnoitre the surrounding ridges, and ascertain (1) if the 21,000 feet gap leading into Nepal north of Kangchenjunga was accessible for coolies from this side; (2) if any practicable line of ascent existed to the snow-plateau lying west of the northern ridge of Kangchenjunga; (3) if the Zemu side of the 19,300 feet gap at the eastern base of Kangchenjunga was accessible.

For half an hour we strolled beside a rivulet which flowed parallel to the huge moraines at the foot of wide fanlike slopes which among such surroundings seem by contrast a plain. They would make an excellent golf ground. For the golfer nothing is sacred. He exhibits his skill unabashed under the shadow of the Pyramids; he may be seen going his rounds, a red ant, beneath the precipices of Gavarnie. Since the hillsides of Darjiling are too steep for him, the day may come when in order

¹ See Appendix ii. to the late Mr. Louis's *Gates of Thibet*. It may be noted here that the Lamas particularly dislike the destruction of life near their Gumpas, and the traveller who desires to be on good terms with them will do well to respect their feelings. See Hooker's *Himalayan Journals*, vol. ii. p. 40.

to follow his fascinating pursuit he will resort to the back of Kangchenjunga, and argue over the respective charms of 'bunkers' and crevasses with the mountaineers of the coming century in a Club-hut beside the Zemu Glacier.

Scattered blooms, the last of the summer, which I promised myself—too hopefully—to collect on my return, nestled in the shadow of the larger boulders. Here was a solitary ranunculus, there were some primulas; a patch of large sky-blue gentians or a clump of the familiar edelweiss. To meet these Alpine flowers was like being welcomed by old friends; the changes in their garb were too slight to be noticeable to the unscientific eye. Presently we reached the spot where our brook issued from the small tarn Mr. Hofmann had spoken of. It lies between the moraine and a rock-buttress in the farthest corner of the meadow, at the foot of one of the pillars of the gate through which the great north-western affluent of the Zemu Glacier pours its frozen flood. The water, mostly I think spring water, dammed in by the moraine, was of a pleasant grey-green tint. No better site than its shore for an Alpine hut could possibly be found. There is sufficient fuel, dry roots of juniper, at hand, and as to 'excursions,' it would be premature and wearisome to the general reader to suggest half of the conceivable climbs to be made from such a centre. They must be left to be chronicled by the future Editor of the 'Climber's Guide to the Kangchenjunga Group.'

We walked along the bank above the lake and then launched out on to the glacier, shaping our course for the rocky corner above the junction of the Zemu and its great north-western tributary, which I propose to distinguish as the Green Lake Glacier. The walking was rough, but free from any difficulty; the ice was dotted with granite

boulders, but everywhere visible. The huge proportions of its ridges and furrows made progress somewhat slow and laborious. Just before we gained the corner above mentioned, which was our immediate object, we halted for ten minutes while I made a rough pencil outline of the great ranges that closed us in on every side save where we looked down the long gorge or funnel through which we had laboriously climbed to this upper world.

The central and absorbing object was of course Kangchenjunga. It rose, three miles off, to a height of 13,000 feet above us, 2000 feet more than the height of Monte Rosa above Macugnaga, in a broad line of cliffs of terrific steepness which appeared hopelessly inaccessible to any direct attack. They were supported by two buttresses of unequal size which enclosed an icy bay filled by the avalanches that fall from the névés hanging on the precipices of the mountain. The right hand (western) buttress is a marvel of mountain architecture; it springs from a low mass or pedestal of splintered granite, and flies up in an ice arête, of a length and steepness which defy Alpine comparison, until it rests against the northern ridge, the boundary between Sikhim and Nepal. Beyond it another glacier bay ringed in by an unbroken horseshoe of cliffs defends all access to this ridge between Kangchenjunga and the beautiful double peak (23,350 feet) we propose to call the Twins.

East of the highest peak of Kangchenjunga the skyline was formed by the ridge visible from Darjiling, here exactly reversed. It sinks in a splendid succession of shining curves towards the 19,300 feet gap. More to our left and much nearer were the broad shoulders of Simvu, the *visible* top of which was broad and blunt. Mr. Hofmann writes of its craterlike form, but the resemblance to anything volcanic is very superficial. The highest crest, I believe, lies farther

back, and what is seen is only a shoulder. A very broad glacier flowing quietly from a great snow-plain between Simvu and Siniolchum, led to the broad saddle I had seen from Gantok. In this direction exploration promised to be both easy and profitable. Little Siniolchum closed our view of the range beyond the Zemu Glacier; the point of the thin spire of its glorious neighbour was just visible over its southern shoulder. When we turned to the north-west we enjoyed an interesting glimpse into an unknown region. The 'Green Lake Glacier' obviously carries the overflow of vast snowfields. Above its lower icefall two streams unite, one comparatively short, coming from the 21,000 feet gap, the other pouring in a broad mass of seracs from a higher reservoir, under the cliffs of a level-topped, steep-sided snow-crest, which I will distinguish from its form as the Tent Peak (24,090 feet). It is constantly seen peering down over intervening ridges by the explorer on the Zemu Glacier. Unless I am mistaken, it is also visible from the neighbourhood of Gantok over the gap between Simvu and Siniolchum.

The hollow enclosed between the converging moraines of the Zemu and Green Lake Glaciers had been very lately a lake, and was now a lake-basin. We had to descend a couple of hundred feet and then to clamber round its steep sides. Our way next lay through a narrow funnel between the mountain and the glacier which led up to similar empty basins. The hillside was steep and tiresome to traverse; the moraines were rough, loose, and uneven. As we tramped on the broad gap filled by the Simvu Glacier closed behind us, and we gradually opened a long, narrow, snowy corridor leading up to the 19,300 feet gap. It cannot have been more than 2000 feet above us, and the ascent lay over somewhat crevassed but easy slopes.

In about four hours from our tents we had reached the

junction of the ice coming from Kangchenjunga itself with that of the glacier that flows from under the horseshoe of cliffs that connect it with the Twins. Here we lunched frugally but satisfactorily, despite the altitude, which cannot have been far from 17,000 feet. The spot might well have served for a camp ; with a little exertion juniper roots sufficient for at least two days' firewood might have been collected. The air was strangely warm and oppressive, so much so that Maquignaz took off his coat, and rolling it up for a pillow was soon sound asleep. I did not rouse my companion, but leaving, like a barrister's clerk, a scroll attached to one of the stones at his head, announcing that I should 'return shortly,' I descended on to the glacier.

Solitary rambles above the snow-line are forbidden to the prudent mountaineer, or at any rate are, as the Scottish doctor said of toast-and-water, 'only to be indulged in rarely, and then under the best advice.' Yet there is a fascination in complete solitude with Nature, a pleasure which grows more intense in regions where Nature is untouched and untamed by man. A virgin solitude—a scene that since the world began no human eyes have ever rested on—moves us most of all. I had enjoyed such a scene ten years before in the heart of the Caucasus, under the shadow of the cliffs of Dykhtau. I now had the good fortune to repeat the experience in the heart of the Himalaya, beneath the even mightier precipices of Kangchenjunga.

I walked up along the crests of the broad, icy billows for a considerable distance, until I had reached a spot a few hundred yards from the lowest rocks of the splintered pier that forms the base of the great buttress of Kangchenjunga. I was exactly opposite the centre of the troughs of the two névés that issue respectively from beneath the 19,300 feet gap east, and from the icy bay

west of Kangchenjunga, between it and the Twins. I could look into both.

The snowy corridor leading up on this side to the 19,300 feet gap is by no means steep, and, when the snow is in good condition, a party of roped mountaineers should have little difficulty in walking up to it. The vertical ascent can hardly exceed 2500 feet. To attempt to *descend* on the other side into the Talung Valley would, however, as we afterwards ascertained, be a far more doubtful and hazardous experiment. It is one which in my opinion ought not to be made. It seemed to me probable that a visit to the gap would, owing to the depth and narrowness of the trench between the impending cliffs, prove less interesting than a walk to the broad saddle between Simvu and Siniolchum. The height assigned to this in the official map must be incorrect. It cannot be lower than 18,000 feet. It was in this direction that I proposed to make our first reconnaissance. From a camp at the point at which I had left Maquignaz, we might, I thought, at any rate get high enough on the slopes of Simvu to obtain a comprehensive view of the opposite range and the possible passes over it into Nepal.

While I pondered on these to an explorer weighty matters, and studied at my leisure the stupendous mass of Kangchenjunga—its grey granite walls, smoothed and polished by the avalanches that fall from the hanging glaciers that cling on its loftiest crest, the long series of delicate curves in which that crest rises through 9000 feet of vertical height from the gap at its eastern base to the double summit—a change came over the scene, the heaven was troubled; a thin veil of mist blurred, but did not at first hide the mountain outlines.¹ The sky, which had

¹ See the photographs taken on this day, which are also valuable as showing the landscape with the summer snow-level in its usual place.



been deep blue, turned pale, then grey, then almost yellow, while dark, evil-looking streaks of vapour, not the ordinary honest, shining cumuli of noon, hung about the ridges. Presently a cloudlet pushed its unwelcome nose through the 19,300 feet gap, then retreated and vanished. But it was soon followed by others which persevered. The air, even in the middle of the glacier, where as a rule there is some sparkle, was perfectly still, and grew strangely close and oppressive. The sun looked sick, and was surrounded by a lurid ring tinged with faint prismatic colours, strange iridescences such as Tintoretto spreads about his Christ in Judgment.

I cannot pretend that these celestial appearances framed themselves into any positive symbol. Had I possessed the imagination of some of my friends, I might perhaps have recognised the tutelary Demon of Kangchenjunga, glaring at the intruder on his solitude. But I saw enough to convince me that there was mischief afoot in the form of a violent atmospheric disturbance. There were all, and more than all, the appearances that prelude one of the great outbursts of Föhn wind in the Alps, and warn every prudent mountaineer to seek the shelter of the valleys. I lost no time in rejoining and rousing Maquignaz, and then without a halt, at a pace as hurried as the rough nature of the ground would permit, we retraced our steps towards camp. By the time we had climbed the huge lateral moraine of the Green Lake Glacier the whole sky was densely overcast, and a most villainous-looking bank of black clouds was visible, gathering far below us in the angle where the Zemu and Teesta Valleys join. Of a sudden a chill easterly blast swept over us, and the vapours borne by it came racing up across the surface of the lower glacier. We raced too, and reached *terra firma*, the grassy moraine

above the lake, just as the first wet flakes of snow were blown into our faces. Five minutes later we were immersed in a blind fog and a driving snowstorm. Fortunately we were in a situation where it was impossible to go wrong. The trickling stream from the lake was the best of guides across the mile of open ground that still separated us from our camp. Presently we heard shouts, and the weird figure of our Darjiling sirdar bounded out of the mist, brandishing cloaks and umbrellas. His high coloured cloth boots, queer conical headgear, and energetic attitudes reminded me of a Japanese grotesque. Ten minutes later I appeared, a snow-caked phantom, before the eyes of my companions, tumbled into our tent, and panted speechlessly for several minutes. We were camped almost as high as the top of Mont Blanc, and, as has been proved in the exalted cities of Peru, altitude is a serious consideration in a long-distance race, whether for men or horses.

Our Whymper tents were practically rainproof; their floors were continuous, and their structure was well adapted to throw off the white blanket which now began to cover the face of the earth. It was of course vexatious that this relapse in the weather should have occurred just as we hoped the rains were over and the fine autumnal weeks that as a rule precede winter in this region had begun. But we trusted that this was 'the clearing shower' and would be no worse than what had gone before. We looked for a glorious morning to succeed the base-born clouds that had climbed up to envelop us. But daylight showed nothing but a harmony in grey and white, in which no object visible was more than twenty yards distant, and such objects as were visible were vague. All day long the snow fell heavily and incessantly; we were being slowly buried. Our morning occupation con-

sisted mainly in keeping lanes clear between the tents, beating the snow off their roofs, and opening provision tins. About noon a cry was heard, forms were discerned, and messengers from the lower camp appeared, bringing the European mail—a strange arrival in the circumstances, due to the thoughtful energy of Captain Le Mesurier. By good luck the newspapers contained the verdict in the Dreyfus trial, and that to a legally trained English mind most strange proceeding was discussed with our Italian companions with a warmth that helped us to pass the afternoon.

Our coolies showed remarkable cheerfulness. There were peals of laughter among them while the outdoor work lasted, and after we had all been driven under cover, the voice of a storyteller came through the white darkness from their tent, and his tale was interrupted from time to time by chuckles discreetly subdued lest they should disturb the Sahibs in their sleeping-bags.

By night, however, our situation began to grow serious and to call for all our thoughts. A small party of coolies arrived, having forced their way up from the lower camp with very great difficulty. They further reported that some men we had sent down on the previous evening had not turned up, and that they must certainly have lost their way and perished in the snow.

Having had some experience of the tendency of uncivilised man to shelter himself when overtaken by bad weather under the nearest rock, and realising how difficult it was to wander far, either to the right or left, in the narrow vale between our camps, I did not feel very seriously alarmed as to the fate of the missing men. Anyhow, it seemed in my judgment futile to send out a party into the driving darkness that surrounded us on a vague search. After some discussion I had unwillingly

to take on myself the responsibility of the decision to do nothing.

We did not spend a restful Sunday night. Our lack of exercise during the day was against slumber; our nerves were strung by the thin air, and also by anxiety as to the missing men, while there was urgent need from hour to hour for clearing the ever-thickening snow off the tents' sides. Fortunately Whymper tents made of Willesden canvas are the most stable and least permeable form of light shelter yet devised for the use of travellers. Whenever I put my nose out of a sleeping-bag it felt extremely cold. The glass of milk by my side was frozen hard in the morning.

All that night the snow fell heavily, and on Monday morning the storm, which had already lasted forty hours, showed no sign whatever of abating. Owing to the complete absence of wind there was no drifting, and the average depth taken at our tent doors was exactly a metre, or 3 feet 3 inches. The Mummery tent, where Maquignaz and Sella's photographic assistant lay, was hardly visible above the surface. The coolies in their floorless tents with the roofs tumbling in on them were in even worse plight. Retreat had become imperative. The only question was, whether it would be possible to force a path down through the mass of snow. Happily the ground we had to traverse to the lower camp was as easy as any pathless ground could be. Some one, Maquignaz, I think, mentioned avalanches, but a moment's reflection reassured us on this point. So long as we stuck to the broad trough below the moraine they could hardly reach us.

Before we could set out, a preliminary task, and that, in the circumstances, an arduous one, had to be accomplished. Our tents had to be extricated and packed up, the piles of goods uncovered, and the packs adjusted. Some

stray objects proved irrecoverable. I can confidently promise the next visitors to the Green Lake Plain, that they will find several relics of our expedition, including, I believe, at least one serviceable ice-axe. During this process we could hardly move out of the tracks from tent to tent. When we got into motion it seemed at first as if to make any substantial advance, even on the level, would be beyond our power. All traces of the passage of our men on the previous day had been entirely obliterated.

Shifts of coolies were sent ahead to open a track ; we and the luggage followed. We formed a quaint procession. Garwood had donned for the occasion his Spitsbergen costume, a peakless cap and a fur-lined tarpaulin coat ; the Gurkhas had tied up their heads as if they had toothache ; the Bhutias' faces were smeared with soot and tallow. The work was very laborious, and our progress extraordinarily slow. Changing leaders frequently, we floundered along, sinking above our knees at every other step, and glad when we did not tumble up to the waist in some hidden pitfall.

Presently the gloom grew less opaque, the dark fog turned into shining mist. Then, of a sudden, the veil before our eyes was rent. The giants of the Himalaya glared down, incredibly vast and strangely transfigured, on the train of miserable ants crawling at their feet. We found ourselves scorched and blinded in a world of dazzling, unbroken, and unmitigated brightness. The blaze of the vertical sunshine reflected from the myriad facets of the newly fallen snow, and enhanced by the shining particles of floating mist, was terrific. Nowhere have I felt such intolerable heat as in this frozen wilderness.

The coolies put on the dark spectacles with which we had provided them, and tied rags under their chins ; the Bhutias smeared their faces with more soot and tallow ;

the Lepchas undid their pigtails and tied their long black locks as a screen before their eyes. As to Garwood in his Spitsbergen costume, his case was the worst. He seemed in some danger of sunstroke or collapse, and I thought it prudent to conduct him into the only shade discoverable, a few square inches under an overhanging boulder on the moraine, and let him rest there until the first fury of the victorious sun was overpast.

To dwell only on our personal inconveniences or sufferings would be to misrepresent the situation. The dramatic vision of the transfigured Kangchenjunga, shining white from base to summit, was withdrawn almost as suddenly as it had been vouchsafed to us. Mists, thin and semi-transparent but frequent, returned to veil the view as a whole. Between them marvellous apparitions, the mountains of a dream, spotless spires of snow, incredible pinnacles or battlements of ice, gleamed from time to time against shifting spaces of blue sky. Gradually, however, the mist prevailed—a mist not of the nature of a cloud, but like a summer Channel fog, hot and steamy. We panted and perspired through it, in our prolonged struggle with the new snow. Where the ground beneath was smooth we crawled on fairly well in the deep track across the levels we had strolled so easily over three days before. But when we trod among loose boulders it was shin-bruising, ankle-twisting, break-knee work.

A stream had kept its course open, and wherever possible we waded in its stony channel, preferring to be able to see at least where we put our feet. At last, after hours of toil, the lower camp came in view. We found Mr. Dover and our men surrounded in snow, but it was only half the depth of that we had left at the Green Lake Plain, and they had had time to clear it partially from the tents. The three missing men were safe in camp ; they had,

as I had anticipated, taken refuge in crannies of the rocks during the thickest of the storm. We suffered from severe headaches and parched throats, and I on arrival passed a very restless and chilly night, for the temperature dropped suddenly at sunset.

At the time we supposed that this disastrous storm was only a natural freak of the notorious climate of Sikkim. It was not till our return to Darjiling that we learned that it was no ordinary incident of the Himalaya, but the phenomenal and unprecedented outbreak which, by the sacrifice of life it caused, and the havoc it wrought in and about the villas and tea-gardens of Darjiling and the neighbouring villages, acquired a world-wide notoriety.

At Darjiling the rain began to fall at 2 P.M. on Saturday, by 4 P.M. on Sunday 15 inches had fallen, 12 inches more fell in the succeeding 12 hours, making a total of 27 inches in 38 hours.¹ The average annual rainfall in London is 25 inches, at Darjiling 121 inches, at Gantok 146 inches. On Sunday night the hillsides began to give way, several houses and their unfortunate inmates were swept off the steep slopes on the east side of Observatory Hill, outbuildings and roads were damaged in all directions, great gashes were cut in the sloping tea-gardens, and down in the Ranjit Valley the bridges were swept away and a native bazaar destroyed. The loss of life in the town was estimated at 100, and in the neighbourhood at 400. Comparatively few Europeans perished, but among the victims was a family of children whose fate excited universal sympathy.

Such a disaster could not fail to be exaggerated by an imaginative press, which at first attributed it to an earthquake and grossly overstated the amount of damage to the town, at the same time disposing of our party under hypothetical avalanches supposed to have been observed from a

¹ Another record makes the fall 25.5 inches.

distance of forty miles. That they fell, if they did fall, on the opposite side of the mountain to that on which we at the time were known to be encamped, was treated as an immaterial detail. This news having been telegraphed from Calcutta to London, aroused a momentary interest among our friends at home, and even led to a correspondence in the *Times*, in the columns of which my friends, Mr. Bryce and Sir Frederick Pollock, finally disposed of the anonymous alarmist.

The Meteorological Department at Calcutta took some pains to trace the track of the storm. Moving up from the Bay of Bengal it struck with its full force on the Darjiling spur, where the heaviest rainfall was measured. It would then seem to have penetrated the mountains with its centre resting on the Teesta Valley, and its left wing spread over the Kangchenjunga Group. It did not stop there, but spread northwards over Lhonak and the ridges that encircle it, probably dying away gradually on the Tibetan uplands within the basin of the Brahmaputra.

The immediate consequences of this atmospheric disturbance were that Garwood was more or less knocked up for three days, and that Signor Vittorio Sella and I got our faces so painfully burnt that when a relief party with fresh provisions met us three weeks later at Jongri, they reported us as 'safe but wounded.' My lips were badly blistered, and, owing to the subsequent exposure to intense cold, they remained for more than a month in a state in which meals were a daily penance. Future mountaineers in the Himalaya may do well to profit by our experience, and provide themselves with linen masks as well as snow-spectacles.

A more serious result of the snowstorm was that we had to reconsider all our plans. Any hopes we had cherished of high ascents and new passes above the Zemu



THE FIVE PEAKS OF KANGCHENJUNGA AFTER THE SNOWFAIL.

Glacier were summarily put an end to. The snow-level had been reduced from 18,000 to 14,000 feet. No one who has climbed in autumn in the Alps needs to be told that it would have been the height of folly to attempt to open a new pass, which at the best of times must be at least equal in the extent of ice to be traversed to the Lysjoch, immediately after a snowfall of a metre, extending 6000 feet below the ridge. To take fifty laden men over such a pass was clearly impossible. We had perforce to fall back on my alternative plan. We resolved to work round over the two yak passes crossed by Mr. White in 1891 into Lhonak and thence attack the Jonsong La, said to have been traversed by Rinsing. This course had some compensations, we should see more country and get nearer Tibet. Besides, it was reasonable to suppose that the great stormcloud coming from the south had exhausted itself on the heights of Kangchenjunga and passed more lightly over the ranges further north.

I suggested to the Signori Sella that they might, if they thought fit, take half our porters and Mr. Dover and work back over the Yumtso La and Guicha La passes, meeting us finally at Jongri, but was glad to find that they preferred to share our fortunes.

The morning of the 26th September broke keen and cloudless, the forerunner of a spell of fine weather that, with temporary interruptions of no long duration, was to last for the remainder of our tour. Our present pains and future perplexities were quickly forgotten in the astonishing splendour of the landscape. Our world was all white; the smoke of the camp-fires hardly sullied the pure heavens. There was no sound save the bubbling of the half-buried brook and the hissing of the little snow-slides as the sun struck the steeper portions of the southward facing slopes. The white crest of Siniolchum rising

above the moraine that sheltered us, invited us to climb to a full view of the range across the glacier. The phenomenal heat and glare of the previous day had passed away, never to return ; the temperature left nothing to be desired.

We spent happy hours perched on an immense boulder in the middle of the glacier, while Garwood used his plane-table and endeavoured to incite Rinsing to follow his example. So the day passed ; the next was equally fine, and Maquignaz and I started up the hill immediately behind the camp. Our ascent was a succession of manœuvres to evade as far as possible the heavy snow. First we climbed a grass gully, so steep that most of the snow had peeled off it in little avalanches, leaving the hillside slippery. Then we got on to a rib of the mountain where broken rocks occasionally gave firmer foothold. But such interludes in our uphill wade were all too brief, and when a brow, some 1500 feet above our camp, which commanded the whole range had been gained, we were content to stop. In the existing condition of the snow, to reach one of the peaks on the ridge above us seemed a hopeless task.

I am afraid that any attempt to give a picture of the scene set before us must be equally hopeless. The first fact I must ask the reader to grasp is that Kangchenjunga and Siniolchum stand twelve miles apart, that they occupy relatively to the Zemu Glacier the situations the Jungfrau and the Aletschhorn do to the Aletsch Glacier. At the Green Lake we had been approximately in the position of the Concordia Hut ; we were now in the position of the Eggishorn.

Siniolchum, therefore, had superseded Kangchenjunga as the centre of the landscape, and no nobler centrepiece can be imagined. Though only 22,570 feet high—nearly

6000 feet lower than Kangchenjunga—Siniolchum, owing to its symmetry and proportions, and also to the splendid incrustation of its precipices in a fretwork of snow and ice, has impressed the few Europeans who have as yet approached it as the most superb triumph of mountain architecture. To the neighbouring peaks it is as Giotto's Tower to the rest of Italian Domes and Campanili.

From the head of the Zemu Glacier the mountain is not well displayed; its summit, seen end on, becomes a mere needle, or rather, for the local Chamonix name, despite its associations, seems inadequate here, a spire of amazing sharpness, a silver spearhead. But from the slopes of the Thangchung La, Siniolchum is in full view from base to summit. Let the reader picture an Aiguille Verte, or Dent Blanche, twice as large and with double the amount of snow and ice clinging to its cliffs, and he will still be far from realising the beauty of the most beautiful snow mountain I have ever seen, possibly the most beautiful snow mountain in the world. It lifts its exquisite form out of the icy folds of a tributary glacier which plunges down in bold ice-falls into the Zemu. Its precipices approach the perpendicular as nearly as those of a great mountain may. Yet, steep as they are, the surface of naked rock visible is limited to one or two 'Heisse Platte' (as they would be called in the Alps), and even these were now powdered in places by the late fall. The whole face of the peak has been elaborately decorated by the fairies of frost and snow. Bosses of ice or veined névé bulge out in splendid curves to end in blue overhanging cliffs. Between them the grey crags are divided and encrusted by silver bands, fluted by the melting and frequent sliding of the snows. Frozen eaves hang out from the highest ridges. So thin are they that they



THE LOWER CAMP BY THE ZEMU GLACIER

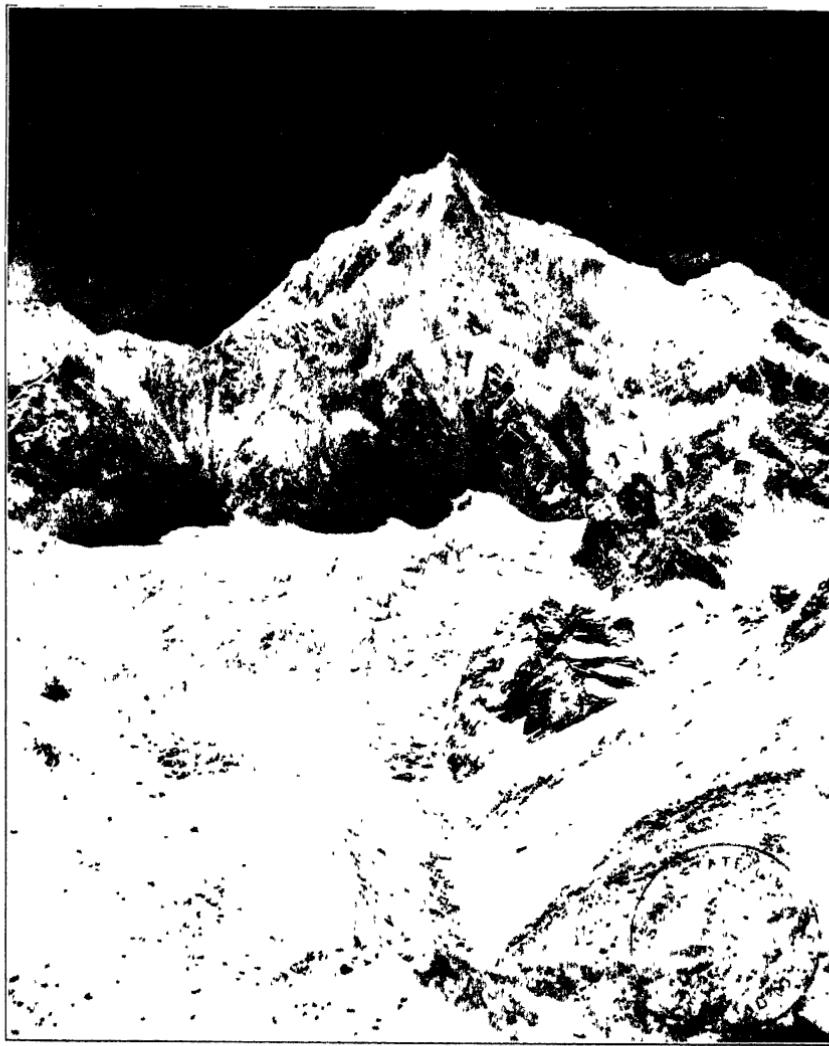
become semi-transparent in the bright Indian sunshine, and thus outline the peak against the deep upper blue with narrow lines of light.

Siniolchum is, for the climber, the ideal snow mountain ; the throne, where

‘Power dwells apart in its tranquillity,
Remote, serene, and inaccessible.’

Inaccessible ! For my own generation I am not afraid to use the word. But others will come, and, standing on our shoulders, will boast, as men did in Homer’s day, that they are much better than their fathers. Who can tell ? The story of the Alps and Caucasus seems to show that every virgin peak must sooner or later meet with its conqueror. From the saddle between Simvu and Siniolchum—on which but for that inexpressibly inopportune snowstorm I might already have been standing—some slope or rib may be revealed by which a more fortunate mountaineer will one day attain to the last surge of the fantastic snowy eave that hangs over those shining cliffs. Let him be careful to treat that snow with due respect, or in more senses than one he may enjoy a Pisgah view.

With Siniolchum close at hand it was not easy to attend to any of the lesser beauties of the heights. Yet, as Signor Sella’s photographs show, Siniolchum was only one feature in the view from our high perch above the Zemu Glacier. Little Siniolchum (21,450 feet) is a peak which anywhere else would attract much admiration. The glacier itself runs as a connecting thread through the long vista. Far away to the right it issues from the hidden hollows under the precipices of Kangchenjunga. We look up it to the five peaks of the great Monarch of Mountains, and see at their side the Twins, and the Sugarloaf, and the depression that might have let us into Nepal. As the day progresses we watch the thin



SINIOCHUM.

scarf of mist, torn from the cloak of vapours spread over the southern valleys of Sikhim, which, however pure the upper vault, seldom fails to issue from the 19,300 feet gap, and to wind itself across the broad flanks of Kangchenjunga. Then turning our eyes eastward we trace the broad ice stream as, tossed into dark waves each 100 feet high, it passes beneath our feet, and, falling more rapidly, sinks out of sight towards the blue forests of the Zemu Valley. In this direction the blunt peaks and ice-cloaked shoulders of Lama Anden form a background. Far away to the east behind the crags that separate Lachen and Lachung, the eyes are caught by the distant cliff of Chumalhari rising beyond the Tibetan frontier.

After two days of divine weather we could say of the Zemu Glacier—We have come, we have seen, even if we have not conquered. If we still hoped to get round Kangchenjunga it was time to move on, since in a country where there are not only no inns, but no inhabitants, you must plan your tour according to your provisions.

CHAPTER VII

LHONAK

BEFORE we cut ourselves off for a season from the world of men and plunged into the uninhabitable regions of Sir Joseph Hooker's map, we sent down a runner to inform Captain Le Mesurier of our resolve. We had received several messengers from him, one of whom brought up a most acceptable stirrup cup in the shape of a bottle of port.

After descending a short distance, less than a mile, in the hollow beside the glacier, we struck a well-marked track which zigzagged very steeply up the mountain-side on our left. Here, to my dismay, Garwood completely broke down. He had been more or less ailing ever since we had first reached 14,000 feet, and had never fully recovered from the effects of the sun-heat after the snow-storm. He now proved unable to walk more than a few yards uphill. We did our best to rig up a carrying-chair, but the hillside was too steep, the coolies too clumsy, or our material too inadequate, and the contrivance collapsed before the rival photographer had had time to seize his opportunity and immortalise a procession which, apart from the central figure, bore a striking resemblance to those seen in London streets on the Fifth of November.

When the carriers dropped their burden there was nothing for it but to call a halt on a grassy shelf or platform, 1000 feet above the Zemu Glacier, obviously used as a camping-ground by native parties. Chumalhari was again a very fine

object, a half-dome cut down vertically on the north to the gap between it and a lesser peak. Its outline reminded me somewhat of the Cima Tosa, as seen from the Ortler Group.

We spent on the whole an enjoyable evening, and witnessed a sublime sunset and afterglow. The sunsets in the High Himalaya, though less vivid than those I saw afterwards on the Bay of Bengal, were often singularly beautiful. The colours were tender and exquisitely graduated ; pools of green and gold sky were ringed round with the redder tints of the melting vapours. We noticed more than once a peculiarity, referred to elsewhere in India by Sir J. Hooker, the false sunset in the East, where a glow, as strong as that when sunset and sunrise fade into one another on the northern horizon in the Highlands in June, would show above the mountain tops, while zodiacal rays, or an appearance resembling them—thin bars of light—shot across the zenith, uniting what appeared as separate sources of illumination.

Our camp was at the existing snow-level. Next morning Garwood had fortunately recovered. Despite their three days of almost complete rest, the coolies were as usual slow in starting. I yielded to impatience, and set out alone in advance. The pass looked barely two hours off, but the retreating hillside was deceptive and the distance proved considerable. One slope succeeded another, and the fresh snow soon became a serious hindrance. For the final thousand feet of climb it was very heavy. To save myself trouble in stumbling among the buried scree, I took to a very steep bare funnel. The only result was that I had to traverse more and larger moraine boulders, smothered in loose snow. As I approached the ridge the surface grew softer, and I pounded along, breaking deep through the crust in nine steps out of ten, and glad to take breath every hundred yards on any bare patch that offered

a dry resting-place. Siniolchum was always a pleasure to look at; and as the advance guard of our army came up, headed by Rinsing in his silk jacket and round cap, using his umbrella as a sunshade, and closed by Mr. Dover in his white flannels, there was no lack of picturesque incident or variety in the foreground, although Garwood, warned by experience, had judiciously discarded his Arctic costume.

The party caught me up a quarter of an hour below the pass. The Thangchung La is a broad but not deep gap, guarded on both sides by rocky eminences. One of the neighbouring crags has a curious resemblance to a large bird. The summit east of the pass could easily be climbed when free from snow, and would afford a fine panorama. We found on the ridge a cluster of small stone men duly decorated with prayer-flags. The view to the north was not remarkable; we looked across a deep glen, hemmed in at its head by some comparatively insignificant peaks and glaciers, to the long slopes of the Thé La, only a few hundred feet higher than our standpoint, though separated from it by a gulf of 3000 feet.

On the northern slope of the Thangchung La, where the next traveller may bask on banks of flowers, we did not see a single bare patch of ground. Our progress was an interminable wade in soft troughs and down slithery snow-banks. We chose at first a straight line for the valley; the summer track makes, I think, a great sweep to the left. I allowed myself to be guided by what I took for stone men put to mark the way; small, regular pyramids some five feet high emerging at intervals from the white surface. On approach they proved to be plants, stalks of the giant rhubarb (*Rheum nobile*).

I had to submit to the derision of my companions, but I may plead in excuse for my mistake that in 1888 the British troops are said to have on one occasion taken

these harmless vegetables for a party of the enemy, and fired a volley into them.¹

The slopes were as a rule so steep, that though we often plunged above our knees gravity helped us to get forward. The coolies found more difficulty, the trail was beaten till their sandalled feet touched wet grass that gave no hold, and in their case their burdens made the force of gravity excessive. For long after we had reached the meadow beside the Tumrachen Chu we watched the flock struggling, shying, tumbling over one another, in their mostly involuntary gambols. The men who carried our wraps were, as usual, in the rear of the procession, and while waiting beside the scanty fire the brushwood at hand afforded, I caught a chill which it took me some days to shake off.

At last the battered troop were all in camp and our tents began to rise. The camping-ground was excellent, a level plot free from snow just below the junction of two glacier streams. The scenery was on a small scale; we could fancy ourselves in a valley of the Central Tyrolese Alps. The Tumrachen, as the map shows, is a short glen which does not pierce to the Nepalese watershed. It lies in a fork of the mountains, and is overlapped at its head by the Zemu and Lhonak basins, into either of which easy glacier passes may be made. One of these would lead directly to the Green Lake Flat. A bend in the lower valley hid from us its junction with the Zemu, and the forests among which we had crossed its stream a week previously.

Next morning we held a review of our scarecrows, and

¹ W. S. Sherwill describes the plant as follows:—It consists of a conical assemblage of buff-coloured leaves of great beauty elegantly crimped and edged with pink, the whole growing upon a substantial stem upon which, and hidden by the graceful leaves, are bunches of flowers and triangular seeds somewhat resembling mignonette. The plant measures 45 inches in diameter at the base of the cone, and is about the same height.

— 87 —



RINSING.

learned how many of them had suffered from what, for all except the selected company who had been with us at the Green Lake, was their first day's march in the snow. We had spared no pains to see that they started well provided for such an adventure. Besides snow-boots and snow-spectacles they had 'portantinas,' or frames of the most approved description to carry their packs on. But some had lost their boots, and some their spectacles, and most had used their carrying frames for firewood.

Consequently several were lame and slightly frost-bitten; others were half blind; and a few were both. They were all sorry for themselves. Well, not all. To one lad of about seventeen, a son of the headman of Lachen, who had come with us partly to see the world, the trip seemed an endless pleasure. He attached himself to me as a sort of body-servant, and whenever any small service could be rendered was sure to be at hand. He was extraordinarily quick at learning the proper uses of things, and to employ a corkscrew or shut up a field-glass was a dear delight to him. I wished him good-bye at Darjiling, the happy possessor of a many-bladed knife, a drinking-cup, and other sundries. I sometimes wonder if he ever went back to Lachen and his father's house, or if he has joined civilisation and become the factotum of some Sahib's establishment. He was one of the nicest boys I have ever had to do with, and I trust in future years he may, as his father's successor, become the friend of many English climbers on their way to the snows of the Zemu, and perhaps end his days as the Seiler of Sikkim. Among the so to speak professional coolies recruited at Darjiling there was also a sprinkling of cheery ones. The Lepchas from the villages in the Teesta Valley were a feebler, if a less troublesome folk. They had undone their pigtails and woven the long hair which gives them their odd womanish

appearance across their cheeks, and so partially preserved their eyes and complexions. On the whole they seemed resigned to the situation, finding consolation in the good fare and high pay they were receiving.

When I reviewed the camp I came upon two stout Bhutias lying on the ground and blubbering loudly. Their droll Tartar faces were twisted into contortions worthy of the stage. Inferior performers groaned obtrusively and let their eyes fill with tears whenever I came near them. We passed them over in review; some were doctored, some were detected in shamming. One burly fellow came up with his eyes tightly closed declaring he was snow-blind, until on my lifting his eyelid and finding no trace of inflammation he joined his friends in a shout of laughter at his own expense. A few were sent home; one or two went home without leave. It was fortunate for us that as our provisions diminished we could endure a loss in portage. We finally determined to give the troop half a day's rest, and only move our camp up to the snow-level on the southern slope of the Thé La.

I remained in camp; the Sellas and Garwood, who was himself again, started on separate excursions up the glen. The latter reached a point on the moraine of its principal glacier (15,730 feet), whence he reconnoitred an easy snow pass into Upper Lhonak. In the afternoon I accompanied the advance of the coolies. Having as usual outstripped them, I lay down, half hidden by a rock, on the slope they had to climb. The procession advanced, chatting cheerfully so long as they were unconscious of my presence. Suddenly they caught sight of me: their cheerfulness disappeared as if by magic. Some fell on all fours, some fell flat on the ground under their burdens, all groaned piteously. Then I laughed outright, and several of them joined in, like children found out in a game.

We have had lately much experience of the readiness of certain stay-at-home critics to believe, on no matter what evidence, any evil report regarding the conduct of their fellow-countrymen abroad. I have known individuals of this class who in times of peace, and in default of higher game, were not ashamed to seize with exultation on any reference to his followers which could by any means be twisted to a traveller's disadvantage and made the foundation for a charge of callousness or inhumanity. No one is safe from such libels, and I think it prudent therefore to take this opportunity to state explicitly the conditions on which our porters were serving us. The men were all volunteers, and they were all paid at a higher rate and better fed than is usual in Sikkim. We provided for them tents, snow-boots, and snow-spectacles. Their loads were very carefully weighed, and all possible pains taken to distribute them fairly, an endeavour they daily did their best to frustrate by every imaginable ruse. They were never during the whole journey called on to do more than what would be a short half-day's journey for an Alpine peasant. On one occasion they proved their powers by doing voluntarily a long ten-hours' day, two ordinary marches, on a very rough and fatiguing path, in order to reach a village and enjoy a night's carouse before, as they hoped, we could catch them up. This proof of their capacity they judiciously reserved till the end of our travels. Those who were feeble were relieved of their loads as the journey proceeded, those who were ill or frost-bitten were doctored by Signor E. Sella. Their weaknesses and their wiles were manifold. The devices they resorted to in order to delay our start until the sun was high and the snow thoroughly soft and wet were at times exasperating. Yet their sirdars, and the Gurkha police, bore all with a good-humour and patience we did our best, I trust not altogether unsuccessfully, to

imitate. Mr. Dover would at times be sorely tried, but a friendly clap on the shoulders, answered by a responsive grin, was the only approach to violence I ever witnessed. Mr. Dover wrote to me twelve months afterwards that he often met some of our men in the bazaar at Darjiling, and that they professed themselves quite ready to travel again 'with the mad Sahibs who liked to live in the snow.'

To return to the Tumrachen Valley. Our camp was pitched among snow-beds on the highest patches of clear ground.¹ I need not linger over the Thé La. It was in its main features a repetition of the Thangchung La, and although a few hundred feet higher the ascent was easier. A broad terrace-like spur, now a snow-field but no doubt a few weeks earlier a flower-garden, led us to the flag-decked stone men on the crest. Behind us the tips of the peaks of the Zemu, Kangchenjunga and Siniolchum, shot up over the white shoulders of the intervening ridge of the Thangchung La. In front we looked down on a new and strange landscape. A shallow glen, rather Scottish than Alpine in its moulding, its smooth sides now one spotless sheet of new-fallen snow, fell from our feet towards a broad brown flat, whence a series of wide-bottomed, treeless, and featureless valleys ran up to relatively low gaps in a lofty watershed. The glacier-clad summits, with the exception of the icy cap of Chomiomo which appeared on our right, were inclined to be flat-topped, a form that, as we afterwards ascertained, they owe to the fact that they belong to a limestone formation.

The change in the character and surface features of the

¹ In the neighbourhood among the rocks we found specimens of a strange plant bearing a name familiar to Alpine ears, *Saussurea gossypina*. Its flower is protected by what looks like a ball of wool, 'the flower being contained in the hollow centre of the ball which measures in diameter from one to five inches. When the flower has expanded, a hole forms in the top of the ball and numerous insects gain admission, by whose means evidently fertilisation is effected.'

landscape we found in crossing the Thé La reminded me of that which meets the Alpine traveller who passes out of the deep, water-worn side-glens of the Val Tellina into the Livigno District. This comparison will, I fear, be thrown away on most of my readers, for very few of the frequenters of St. Moritz or Pontresina find their way to the pleasant pastures of the Spöl. Still, I will let it stand, since it holds good in another way. Livigno is the only inhabited valley north of the Alps that still belongs politically to Italy. Despite treaties and maps which declare that the frontier shall follow the watershed from Kangchenjunga to Chomiomo, a claim to the possession of Lhonak has, it appears, been quite recently put forward on behalf of Tibet. The foundation of this claim appears to be identical with that which has given Livigno to Italy. The physical boundary of the watershed does not correspond with the racial limits. The passes across it are so easy that they have proved less of an obstacle to intercourse than the lower gorges. The pastures of Lhonak, if pastures they may be called, lying between 14,000 and 16,000 feet above the sea, maintain no permanent habitations; they are grazed by Tibetan shepherds coming over the Naku La from the District of Kambajong on the north. It was thought possible, in the opinion of those best qualified to judge, that we might fall in with some of these pastoral intruders, or even, if news of our intended journey had spread north, with an irregular Tibetan force; and we were prepared in case of need to assert our right to travel in what is, at any rate technically, British territory.

I may as well attempt to explain more fully the discrepancies of maps with regard to the frontier of this remote portion of the Empire. Fifty years ago, as I have previously explained, Sikkim was more or less dependent on Tibet, and through Tibet on China. Its fate hung for

a time in the balance, a little more apathy in Calcutta, and Sikkim might have become another Nepal or Bhutan, a forbidden land to Europeans. Fortunately, above all for mountaineers, the native rulers of Sikkim supplied at a suitable moment provocation adequate to induce the Indian Government to assert and maintain its intention to treat it as a Protected State and an integral part of the Empire.

When this had been decided there remained a minor but not unimportant question—What was the extent of Sikkim? Its boundaries were very unsettled, the State was decadent and consequently suffering from the encroachments of its neighbours, Nepal and Tibet. The Raja of Sikkim had at one time exercised authority almost as far north as Tashilumbo, and in some of our older atlases his claims in this direction are still recognised, or, more exactly speaking, recorded. At the date of Sir J. Hooker's visit the Zemu River was indicated to him as the boundary. But the pendulum had made its full swing when our troops entered Sikkim; by that time the villages of the Lachen and Lachung Valleys with all that lay behind them had become Tibetan. Chungthang at the junction of the streams was informally but practically a Tibetan outpost.

Our British Commissioners were, doubtless, sufficiently acquainted with geography to act on the general rule that a watershed is a convenient boundary. With the assent, I presume, of their Chinese colleagues they drew the frontier so as to include within Sikkimese territory all the sources of the Teesta. It is thus represented in the Survey Maps of 1889. Probably neither party took into serious consideration the local conditions. The Tibetan Government, disregarding the treaty, proceeded to plant and have kept up a small garrison at Gyagong, situated

at about the height of Mont Blanc in a cheerless position in the Upper Teesta Valley, about ten miles south of the passes ; and further to assert their title they have, in true Chinese fashion, built a wall at the base of Chomiomo. Encouraged by impunity they have lately, as I understand, suggested that their proper frontier is the great eastern spur of Kangchenjunga, and that the Zemu Valley and Lhonak—at any rate Lhonak—ought to be considered Tibetan.¹

Our official mapmakers have shown that indecision which has often made them bad witnesses in international disputes. On some sheets they have followed the watershed, on others they have acquiesced in the Gyagong frontier ; in none, however, have they admitted any further claim. In the map last issued, that illustrating Mr. White's journey through Lhonak in 1901, the Treaty Frontier is reverted to. The present Viceroy will, no doubt, take steps to put a limit to Tibetan pretensions. The whole matter is, doubtless, a comparatively paltry and unimportant one. The district in dispute has little value. It cannot, I venture to think, be considered as commercially or strategically important, at least for defensive purposes. It might, perhaps, be advantageously exchanged for something farther south, for instance a portion of the Chumbi Valley. But I doubt whether it enters into the designs of the Lamas to accept any such bargain.

The descent that lay before us into Lhonak was little more than 2000 feet, and in its ordinary condition would have been a pleasant run down grass slopes. The combination of deep soft snow and hot glare in the bottom of

¹ 'The Tibetans are said to bring 300 yaks into the Lachen, and 500 yaks and 1000 sheep into the Lhonak Valley. These numbers are very unreliable and must vary considerably. The Lachen herdsmen say that the Tibetans used to pay a nominal rent of $7\frac{1}{2}$ rupees for the use of the Lhonak Valley, but that this has not been paid for some years.' See *Routes in Sikkim*.

the glen proved, however, very oppressive, and we were glad to cross the mound which lay across its entrance and emerge from the frozen furnace on to the long, bare grass slopes of the main valley. We lunched luxuriously on a hillock carpeted with exquisite light-blue gentians. In front of us spread a wide gravelly flat. We had reached the No Man's Land, locally known as Lhonak, which one authority bids us to interpret as 'the Black South.'

This desolate valley, or rather group of valleys, may be called the Engadine of Sikkim; it is known, like the Engadine, as a place of nine months winter and three months summer: its July snowstorms are proverbial. The lines of the landscape are those of an ice-modelled and ice-protected region. The gentle, smooth surfaces of the lower slopes are obviously due to their long protection by snow and ice from the destructive agencies of air and water and the rapid alternations of frost and heat that have carved out the loftier ridges and deeper valleys farther south. It is a land of moraines, the monuments of departed or diminished glaciers. Their vast dykes stretch along the hillsides or cross the valleys, enclosing flats that were first glacier-basins and afterwards lake-basins; muddy or sandy levels, brightened here and there by sky-reflecting pools or equally blue beds of gentians. There are no trees, no rhododendrons, no shrubs except a few stunted junipers; no real turf, only sparse grasses good enough for yaks, but that would not at all fulfil the requirements of a Swiss cow. The slopes below the snow are brown and yellow, the flats pale and grey. All along the skyline white mists play about whiter summits, round the base of which the shrunken remnants of the old ice-sheet cling closely.

There were three broad openings in the hills in front of us. On our right stretched the wide valley leading to

the Naku La, the easiest access to Tibet proper, and the proper continuation of the route we had been following. It leads also to another pass practicable for cattle, the Lungna La (16,100 feet, Captain O'Connor; 16,967 feet, Mr. White), which brings the traveller back to the Teesta Valley near Gyagong. In the centre we saw the opening of a glen leading to the basin called Goraphu on the two-inch map, the Gora Chu of Mr. White, who visited it, discovering a large moraine-girt lake at its head, and mapped it, in 1902. On the left the Langpo Chu flowed out from behind a vast mass of moraine over which the two fine peaks we have designated the Langpo Peak and the Jonsong Peak, northern outliers of the Kangchenjunga Group, raised their bright crests. No signs of human habitation were anywhere visible.

We sent on our men to prepare a camp at the opening of the Gora Chu Valley. As we plashed across the level, a distance of some two miles, silver mists fell round us, and we might almost have fancied ourselves in the Highlands.¹ When we reached the bank of the Langpo Chu—as the Lhonak stream is called above its junction with the Naku Chu—we found our rustic troop apparently waiting for it to go down. It was decreed that we must cross it and had better cross at once, which seemed to me contrary to the

¹ The height of this plain is, according to the *Routes in Sikkim* of 1892, 15,320 feet, according to that of 1900, 14,200 feet, according to Garwood, 14,400 feet. Mr. White in 1902 made it 16,054 feet. Mr. White's 1902 heights, taken by boiling-point observations, are almost invariably largely in excess of those previously obtained by himself and others. They were calculated in the Survey Department of India from sea-level, but I have no definite information as to the figures that were taken as the lower station readings. However, several of these boiling-point observations have since been computed at the Royal Geographical Society's office, using as the lower stations the Calcutta and Darjiling barometer readings for the same day, and in each case the resulting altitude has been found to be lower than that given by Mr. White on his map, a result which is, perhaps, due to a different lower station reading having been taken. If Mr. White's 1902 heights are accurate, it will follow that all previous observations taken in Lhonak, other than the trigonometrical altitudes of peaks, are much too low.

general rule that snow torrents are most formidable in the evening. In the first place we tried the water was too deep. A hundred yards lower down our pioneers succeeded with the help of the rope in getting across, though the stream rose well above their knees. The coolies showed great pluck and skill in facing the broad, icy flood while the Sahibs, including Mr. Dover, were carried across in a very unheroic fashion on the broad shoulders of one of the Darjiling sirdars.

We found ourselves on a level strewn with large blocks, the heavier portions of a moraine of which the lighter soil had been swept away by floods. It formed a very convenient camping-ground. Here we took the opportunity to further reduce our coolie train, sending back as many as we could spare. Their route lay along the river to its junction with the Teesta at Zemu Samdong above Lachen.

The next morning was brilliantly fine, and we saw Lhonak at its best. The apparent—not however the real—head of the valley to the north, the Gora Chu, was framed by a long, flat-topped mountain with a short glacier flowing under it. The lower slopes of this glen were uniform banks of disintegrated rock. The landscape reminded me of some of Sir Martin Conway's photographs of Spitsbergen. Similar climatic conditions have doubtless produced similar results. The rock-surfaces are protected by a coverlet of snow, formerly permanent, even now raised only for a few weeks in the course of each year. The action of water is consequently insignificant. The process of valley formation is checked, and the hillsides are scored by no deep lateral ravines. Only on the highest precipitous and bare ridges does frost splinter the rocks and supply materials for the moraines.¹ The characteristics of the Lhonak landscapes are

¹ I may refer here to my paper on 'The Conservative Action of Ice.' *Proceedings of the Royal Geographical Society*, New Series, vol. x., 1888.

the extent of smooth, rounded surfaces and the repetition among the mountain spurs of undulating down-like ridges.

To ascend the course of the Langpo Chu we had first to pass the enormous mass of material brought down by a sadly impoverished glacier which had once filled a deep recess enclosed between the ridge running north from Kangchenjunga and the northern prong of the forked spur that encloses the Tumrachen Valley. Except where the torrent has worked itself a passage under the northern slope, the moraines block the valley just as the Miage moraines block the Allée Blanche. Here, however, the lake-basin above has been completely drained. We found faint traces of a path on the steep slope of the northern hillside, which we followed till it was easy to descend on to the level of the vanished lake, a plain almost two miles in length.

The view in front was closed by the fine mass of the Langpo Peak, but otherwise the scenery was monotonous. The snow so far only lay in patches, and we made such good progress that we hoped to reach the head of the valley and the foot of the far-sought Jonsong La before nightfall.

Suddenly we were arrested by the excited movements of our advance guard. We imagined for a moment that a Tibetan outpost had been sighted, or that a band of the terrible 'dogpas' or robbers, said by the Pundits who have traversed this region in the service of the Indian Government to haunt its passes, was about to give our Gurkha pioneers a chance to use their bayonets. But we soon ascertained that the cause of all the excitement was a dark object lying on the brown soil. It proved to be a yak; a wild yak we were told. The report ran down the line that an eatable wild beast had been sighted, and the guns were brought to the front. The hunters advanced

cautiously, and we waited expecting to see the wild beast charge furiously or rush off with a mighty bellow into the heart of his native wilds. To our surprise, and my sorrow, the great creature only rose slowly on his legs and received the first shot with the placid and injured air with which a Spanish bull as a rule meets the first assault of his brutal tormentors.

My sympathy completely changed sides ; the promised chase had become a mere butchery. The poor beast received a final shot at close quarters, staggered, and fell over motionless. In a moment our ragged followers fell on the body with their long knives. It was a revolting spectacle we were glad to turn our backs on. In half an hour the great creature was no more than a number of joints stowed away in the capacious folds of our coolies' garments.¹ His splendid head and horns were preserved and carried with us for three days, but finally, without my knowledge and to my great regret, cast aside in the stress of the ascent to the great pass. The beef proved excellent, and no doubt helped to keep our men in fair temper and good condition during their ensuing trials.

How the solitary animal came to be where we found it remains a matter for argument. The hypothesis that it was ' wild ' seems hardly tenable, though Rinsing states in his Report that on his previous journey he vainly pursued two wild yaks almost at the same spot. Mr. Dover believed that it was a young bull which had been driven out of the herd by a more powerful rival, and had wandered away from its companions in the waste. Rinsing was of opinion that it had been left by the shepherds on their return into Tibet as a peace-offering to the mountain

¹ The Sikhim coolie makes a pouch above his girdle (closely resembling the present fashion for ladies' blouses in this country) in which he stows everything from dirty boots to raw meat.

demons, by whom they will undoubtedly believe it was consumed.

So much time had been lost over securing this addition to our commissariat, that the shadows were already long when we reached a spot where a small stream broke out of the right-hand hills. The name Lanak is given to the locality by Mr. White, who in 1892 made its altitude 17,099 feet. It is apparently the Goize of Rinsing. Mr. Garwood's measurement is 15,846 feet, Captain O'Connor's 15,700 feet. It was not a convenient plot of ground; we were again among the snows on which we were to make our next six camps; but it seemed hopeless to get our stragglers, who were already out of sight in the rear, any farther before nightfall.

This decision involved another day in the valley before we began the ascent to the great pass. Rinsing voluntarily suggested that some of us should occupy it in climbing to the Chortenima La, the pass (18,700 feet in the Government Road-Book¹) that leads from the head of Lhonak into Tibet, and is occasionally used by foot-travellers. Erminio Sella and I caught at his proposal, while Vittorio Sella, with his henchman Botta, preferred to seek a lower eminence for photographic purposes, and Garwood determined to follow the coolies.

About a mile above our camp a considerable glen, running roughly from north to south, joins the Langpo Valley at right-angles. On Mr. White's map it is called the Sayok Chu. Rinsing, who professed to have visited the Chortenima La on his previous journey, declared that that pass lay at its head.

We began by a bad speculation. In order to cut off the angle made by the meeting of the valleys, we attempted

¹ But 19,700 feet in the map accompanying it, and 19,400 feet according to Mr. White.

a traverse of the hillside. It involved us in a scramble over loose blocks of every size and degree of instability. To descend into the flat bottom of the Sayok Chu glen, and crunch over its half-frozen surface, seemed comparative luxury. Our climb began well. Breasting very steep slopes of turf and scree, which faced south and were therefore partly free from snow, we gained a buttress dividing the two heads of the glen. That on our left was filled by ice and overlooked by great frozen cliffs. Our gap was in the nearest corner of the hollow on our right. We had a long scramble among gigantic boulders before we reached the edge of a small short glacier which lay under the ridge.

Leaving to the left a dry gully of scree, I led on to the glacier, and in twenty minutes, after climbing two steep slopes, crossed a Bergschrund and gained the crest. It was broken into strange rock towers and pinnacles twelve to twenty feet high. A descent on the farther side appeared extremely dangerous for any but a party of roped mountaineers, and we were forced to conclude that a few yards more to the west, from the top of the gully I had turned my back on, there must be an easier descent, and that in that direction lay the native pass. Since Rinsing professed to have visited it, it did not occur to us till long afterwards that his memory was at fault.

We stood on a long, narrow, fairly level ridge, supported on the north by a rock-wall, which rose in a row of quaint turrets and obelisks over the white edge of the steep glacier slope we had climbed. The day was glorious, and the heat in the sun, and the frost in the shade, each excessive for comfortable repose. After trying both, we preferred the sunshine. Our height must have been about 18,000 feet; I unfortunately have no measurement. Being free from coolies, we made the ascent with few halts and without suffering from the elevation. When I dropped

a pocket-book some distance below the top, one of our Gurkhas ran back to find it, and remounted at a surprisingly smart pace, which gave no sign of our altitude.

The view before us was a very remarkable one, dazzling in its brilliancy, depressing in its lifelessness. Hardly ever, unless in the Arctic regions, does a traveller see a mountain panorama which is all snow, in which no hint of warm valleys, green fields and forests, wandering herds or human homes relieves the sublime monotony of the frosty heights. The only patches of colour that shone through the white mantle were two blue tarns high on the slopes to the south of the Langpo Chu, which flowed far below us in a straggling stream through its broad, shallow, smooth-sided trench. We had a comprehensive prospect across the vast upland lying at the back of the ridge that overlooks on the south the Zemu Glacier and our Green Lake Flat, and fills the space between the crags at the head of the Tumrachen Valley and the peak in the Nepalese watershed marked 22,700 feet in the two-inch map, and called by us the Langpo Peak. This plateau is divided by flat-topped ridges into several hollows; the southernmost of these was once the feeding-ground of the great extinct glacier, the moraines of which block Lhonak above our Gora Chu camp.

Owing no doubt to a much-needed, but too partial, improvement in the climate, and a consequent raising of the snow-level, the névé that used to occupy this basin has disappeared, taking its glacier with it. The whole of Lhonak bears evidence of the retreat of the glaciers; the region is a magnificent specimen of an ice-modelled country which has been very little altered by sub-aërial denudation.

Beyond this glittering plain we recognised on our extreme left the sharp spire of Siniolchum, the three tips of Simvu, and then, about 18 miles distant, the stately form of Kangchenjunga. For the first time we saw its

THE TENI PLA克 AND KANGCHENJUNGA FROM LTHONAK.



Nepalese shoulder, where a 'Grand Plateau of névé, stretching under the highest ridge, is borne up at its western extremity by a low pointed peak, hardly to be counted as an independent summit. In front of Kangchenjunga, between us and it, below its profile but hiding part of its slopes, rose the Twins and the Tent Peak of Mr. Garwood's map.

From our station the 23,350 feet peak, 'the Pyramid,' was half hidden. The next conspicuous object was the Langpo Peak, a Breithorn with a Little Matterhorn on its flank. Right in front of it appeared a very elegant summit, a Grivola (the Alpine traveller may thank me, and the general reader must excuse me, for these frequent comparisons), turning towards us most delicately ribbed and fluted snow-cliffs.

Then the white skyline fell in a great curve, almost a half-circle, before rising again to another broad steep-sided snow-peak (24,340 feet), beyond which the mass of glaciers at the head of Lhonak were hidden from us behind the bold buttress of a great snow-capped precipice close at hand, a screen rather than a summit, against which our own comparatively humble spur abutted. Turning round and facing north, looking that is to the untrodden side of our pass, we saw a considerable glacier flowing east into a vast desolate basin encircled by lofty cliffs and ice-filled funnels. The structure of the range in this direction showed the characteristic writing-table forms of limestone. In the background the fine snow-peak of Chomiomo was conspicuous. At our feet spread a broad treeless basin of pasturage, now covered with the snowfall of the portion of the great storm which had worked round and outflanked Kangchenjunga. Its surface sank eastwards in regular terraces, which may once have formed part of a lake-basin.

The topography of our surroundings was perplexing. Rinsing assured us that we were on the Chortenima La, and pointed out the great dip opposite us as the Jonsong La. It was assuredly the gap so named in the Government maps, for there could be no mistake as to the triangulated peaks between which it lay. But it was extremely difficult to understand how the basin we looked down into on the north could correspond with the country beyond the Chortenima La. The water seemed to flow south-east—the wrong way! It was only months afterwards that the mystery was solved by the discovery that Rinsing was entirely mistaken in thinking we were on or near the real Chortenima La. In fact we were on the spur that separates the head of the Langpo Chu from the sources of the stream that flows out of the hollow named Goraphu in the two-mile map, at the mouth of which we had camped after crossing the Thé La. It did not occur to us at the time that Rinsing was mistaken, because he had stated in his Report that in 1889 he had made an excursion to the top of the Chortenima La. I am forced to infer that he made the same confusion on his first journey. The true Chortenima La lies six miles farther west, at the head of a hollow, north of the glaciers that form the source of the Langpo Chu, and leads over the limestone range to the Tibetan table-land. It was crossed in 1896 by Lieutenant O'Connor, but no mention of his journey was made to me while in India. In 1902 its crest was reached by Mr. White, but all my knowledge of his tour is deduced from his photographs and map. The position assigned to the pass on the latter is, I feel assured, too far east.

We spent a couple of hours alternately baking and freezing. Signor E. Sella succeeded in photographing the view. Unwilling to undertake on our return a repetition of our gymnastic exercises among the big boulders, we

effected a diversion by floundering down the soft snow on the glacier. Then we got upon a relatively open hillside, and when we came to the glen trudged along the channel of its shallow stream. The walk was thus rendered the least laborious we had had for some time, and it was only during the last half hour, while we cut off the angle between our glen and the Langpo Chu, in order to reach our new camp, that we were reduced again to the hard labour of snow-wading.

Our camp lay about three miles above our last, and four miles below the end of the Lhonak Glaciers. It was deep in snow. Immediately overhead, based on a sort of terrace, along which lies the track to the true Chortenima La, rose a steep buttress of the limestone range that overhangs the ridge we had visited. Beyond this we looked up into a semicircle of snowy eminences and icy depressions enclosing the head of the Lhonak Glaciers. Two at least of these depressions appear to be practicable as passes, but where they lead has yet to be ascertained. Probably on to the track of the Chatang La, the pass which I believe Chandra Das to have crossed in 1879 on his way to Tashilumpo.¹

¹ It is probable that a pass more direct and perhaps less lofty than the Jonsong La will some day be found from Lhonak to the Kangchen Glacier across the ridge south of the Langpo Peak.



THE LIMESTONE RANGE ABOVE THE SAVOK CHU

CHAPTER VIII

THE JONSONG LA

WE had been not a little perplexed by the apparent want of correspondence between the gap Rinsing had led us to and the Chortenima La of maps. But the question had only an academic interest. It was another matter, when next morning I found Rinsing indicating one of the distant depressions at the far head of the glaciers that supply the sources of the Langpo Chu as the Jonsong La. The high gap we had seen, and he had pointed to, on the previous day was invisible from our camp. There was consequently much confusion in the discussion that ensued between him and Mr. Dover. The ascent from the valley to the ridges above it was of over 4000 feet, and if we went to the wrong gap, it was very doubtful whether we should get our coolies to a second. I am always inclined to trust a map, and since the two triangulated peaks between which our pass was indicated were easy of identification, I held that Rinsing's first recognition was the safer to trust to, and that we ought to act on it.

We followed up the (true) left bank of the Langpo Chu to the spot where, before uniting in a single stream, its waters, fresh from the ice, trickled a few hundred yards in devious channels, which were separately fordable. We found ourselves involved in a wilderness of stones of all sizes, like that in front of the Roseg Glacier. When we

had got across the water, Rinsing, without apparent reason, led us round the steep face of the frontal moraine. It was execrable as a path. The snow concealed the nature of the foothold, the smaller stones slipped away under our feet, the larger ones turned over and bruised or tripped us up. I never felt so much disposed to abandon mountaineering as a pastime! At last we reached more solid ground and got on to a heavily snowed hillside. Once more the bed of a small stream, the drainage of one of the secondary glaciers under the Jonsong Peak, served us. Very warm and weary, and rendered somewhat anxious by the uncertainty that lay about our path, we halted under the shadow of a great rock for our midday meal. On the whole this was the worst day of our journey. Whatever may have been the cause, whether it was the heat of the sun that beat on us, or the cold of the stream we waded in, or the roughness of the ground we stumbled over, or the 'rarity of the air' we breathed, or all these things put together, I noticed among my companions an unusual degree of nervous sensibility. I understand that they allege that I was not wholly exempt from similar symptoms. In truth there was every excuse for any reasonable loss of temper. Not only was the actual ascent before us considerable, but the ground to be covered was extensive—and such ground! After lunch we began again, wading and jumping and splashing along the bed of our stream, until that failed us and we had to pitch our tents, having only gained 1230 feet of vertical height in the wearisome day's march.

Our camp in the deep snow was comfortless, as comfortless as perfect weather and our almost perfect equipment for such conditions would allow a camp to be. We did not reckon that we had three similar ones before us. The sunrise was unclouded, and with the sun our spirits

rose. The snow was a little better in the early morning. We had left below the huge monotonous bank above the river, we were now crossing waste ground with a comparatively gentle rise towards the golden rock shoulders of the Jonsong Peak. The sky was undimmed by any fleck of vapour. Far as the eye could reach beyond Chomiomo and beyond Kinchinjow, the unknown, unnamed mountains of Tibet indented the bright horizon with their spears and horns. Some of them, perhaps, were within the horizon of Lhasa itself: the imagination leapt, using them as stepping-stones, to the golden terraces of Potala, the palace of the Dalai Lama.

Presently, close at hand, in the midst of the white desert, we came on an enchanted grotto. Imagine a mound of snow, a white cake cut through its middle and presenting an enormous frozen cliff full of intricate blue veins, and hung from top to bottom with glittering icicles, the whole perfectly reflected in the depths of a snow-framed, ice-floored pool. In that waste of cold, formless snow, the colour and the delicate shapes gained beauty by contrast. Never in the Alps or Caucasus had I seen any glacial freak so fantastic. It was an almost theatrical triumph of Nature's handicraft, a worthy counterpart and contrast to the fairy dells of Sikkim, where the brimming streams dash down dells choked with ferns and flowers. Once again I was carried back to the pantomimes of my childhood. There are no such pantomimes now!

Of the rest of the day I have but few separate and distinct impressions to record. As far as I recollect, it was a monotonous tramp, relieved by perfect weather and wide prospects. We spent our time in gradually rounding the eastern flank of the rocky buttresses of the Jonsong Peak. The train of our porters grew longer and less connected hour by hour; there were always

lessening groups in the rear, black dots like full stops on an otherwise virgin page. The maze of mountains grew wider and more intricate as we rose; our false Chortenima La sank hourly into deeper insignificance. Sunset at last brought colour to the marvellous scene. Above the dull, amber-tinted mists that had climbed through the Teesta Gorges and now lay broadening beneath us, long streamers of light were flung across the zenith.

At the top of a long and comparatively steep slope we gained the level of the deep upper basin that lies in the recess under the pass and is hemmed in between the broad flanks of the summits we call the Langpo Peak and the Jonsong Peak. We were close to the rocks of the latter, but they offered no sufficient site for a camp, though some of our men found a niche for one tent among them. We were a long way from the foot of the snow wall that protects the pass, and there was much glacier and moraine still to be traversed. The strain was beginning to tell on our men, despite the encouragements of Mr. Dover and Rinsing and our Gurkha pioneers, who all behaved admirably. The white slopes below us were still punctuated by the little black companies of our stragglers. Some came in late, some did not come into camp at all that night. Sikhim coolies love to be independent and to halt whenever the spirit moves them.

As soon as the sun had sunk behind the mountain ridge it became bitterly cold. Our coolies had their tents and their cooking-stoves, and they need not have suffered more than we did. But they had many of them thrown away their advantages, their snow-boots and spectacles. They had generally behaved with a carelessness of the morrow which is hardly expedient in sparrows who go hopping on the roof of the world. I, in my sleeping-bag, suffered far less than I have in huts 7000 feet lower on the flank of Mont

Blanc, for instance at the Aiguille du Midi or the Aiguille du Gôûter. Lassitude and irritation caused by our slow advance, by the uncertainty as to the right track, and by the over-keenness of the thin, dry air were all we had to complain of.

The final ascent did not promise to be arduous, and it was only made so by the excessive quantity and villainous quality of the new snow. In order to reach the foot of the actual pass we had first to penetrate a deep hollow or basin filled by glaciers. There was some difficulty in knowing when we trod on ice, owing to the cloak that was spread over the whole face of the mountains except where they showed precipices of golden crag. We crossed what was probably moraine, then a considerable glacier flowing across our path from the Jonsong Peak. Opposite it broad slopes of névé swept down from the shoulder of the Langpo Peak, which seems easily accessible under ordinary conditions from this side. We traversed a second moraine, we mounted soft slopes that led to the scattered boulders at the foot of the steep screen, a rampart like that of the Strahleck, which guards the pass.

We—or I had best, perhaps, speak for myself—I was more exhausted at this moment than at any other during the expedition. No doubt the altitude had some share in producing this feeling, but the want of a substantial breakfast and the heavy snow walking were even more directly responsible. The sensation passed off after a halt and a light meal.

Our train was drawn out to a greater length than on any previous day. Strange as it may seem, the less comfortable the lodging at night the more difficult it was to effect a combined start in the morning. One detachment at least had not reached our last bivouac. The Sirdars or headmen seemed incapable of keeping their gangs together;

the good-humoured Gurkhas expostulated in vain. They at least were always efficient. The more I saw of them the more convinced I became that it is on trained and disciplined Gurkhas that the future progress of Himalayan mountaineering depends.

The final climb began with a steep slope of treacherous new snow lying on a harder layer. There was less necessity for high-actioned wading than on the comparative levels below, but there were compensating drawbacks. Our feet went through the soft slush to slide back on hard névé. Many a step was thus lost, and we had little breath to waste in relieving our feelings by exclamations such as render endurance easier.

My narrative must, I fear, become wearisome with the frequent reiterations of our snow difficulties. But I am forced to emphasise the fact, a crucial fact in our expedition, that we were facing the mountains in a most abnormal condition. In any ordinary October we might have crossed the Jonsong La with comparative ease. With equal exertion we might have done much more. It was exasperating, to say the least, to have to traverse the shoulders of assailable peaks of 23,000 to 24,000 feet and to leave them unassailed. Sitting at home now I sometimes wonder why we pushed no higher. But any one who has climbed in the Alps in winter, who can call to mind his feelings while crossing, say the Wengern Alp, after a January snowfall, may be disposed to sympathise with our shortcomings.

Presently we touched the lower end of a long face of small, bare, broken rocks, up which we zig-zagged with much less trouble. Above them was a little bank, perhaps twelve feet high, of snow, the top of which curved over towards us, with an embryo crevasse beneath it.

The first man hacked out a hole with his axe in the frozen cornice; the second gave him a steady push, and

received in turn a helping hand; and thus the breach was won. Rinsing, always to the front, and a capital walker, was among the leading batch. I was resting a few paces below on the top of the rocks, when he called down to me, 'We are on the wrong pass.' In the most forcible terms I could muster I adjured him to hold his tongue. For I knew that if such news spread down the line of coolies there would be an end to our Tour of Kangchenjunga. To reach any of the other gaps we had seen at the head of the Lhonak Glaciers would involve a preliminary descent to the valley, and once there no bribe would be likely to persuade our coolies to make a second venture.

The prospect that met my eyes when I breasted the gap was at first sight full confirmation of our leader's distressing announcement. Rinsing had consistently promised us that, if the weather were clear, we should from the great pass see the eastern provinces of Nepal spread out as on a map at our feet; should overlook the Valley of the Arun, and recognise the highest mountain of the world crowning the group to which it belongs. All that was now visible to the west was a deep recess, one of the storehouses of a great glacier, encompassed by a white crest slightly higher than that on which we stood, and only about a mile off. It formed a spur of the Jonsong Peak, which rose in cliffs and a very steep rock-ridge immediately on our right.

As my eyes turned southwards they were met by the well-known form of Kangchenjunga, and to its right, looking small in comparison, I recognised from Sir J. Hooker's illustration the characteristic rock-battlements and round tower which distinguish Jannu. At our feet, under the southern cliffs of the Jonsong Peak lay a large névé basin, the source of a glacier which flowed down in a narrowing trough without visible issue in any direction. The first chamois hunter who reached the Col du Géant

from the side of Val d'Aosta may, confronted by the crest of the Chamonix Aiguilles, have felt a similar perplexity. Despite my considerable mountain experience, I could not detect any gap in the apparently continuous cliffs that formed the western wall of this glacier, while to the south it was blocked by the huge mass of Kangchenjunga itself. On the east the rocks of a bold shoulder of the Langpo Peak (22,750 feet) limited our view. Rinsing's theory, in so far as he had one, or as we could discover it, appeared to be that this névé at our feet bent round to the east and formed a feeder of the tributary of the Zemu Glacier, which I have called the Green Lake Glacier.

Garwood set up the plane-table, and ascertained that with relation to Jannu and Kangchenjunga we were in the position assigned on the map to the Jonsong La. From what I had seen both during my walk on the Zemu Glacier, and from the Sayok La (Rinsing's false Chortenima La), I could not believe in any connection between the névé below us and the basin of the Teesta. Consequently I came to the obvious conclusion that the glacier at our feet drained into Nepal.

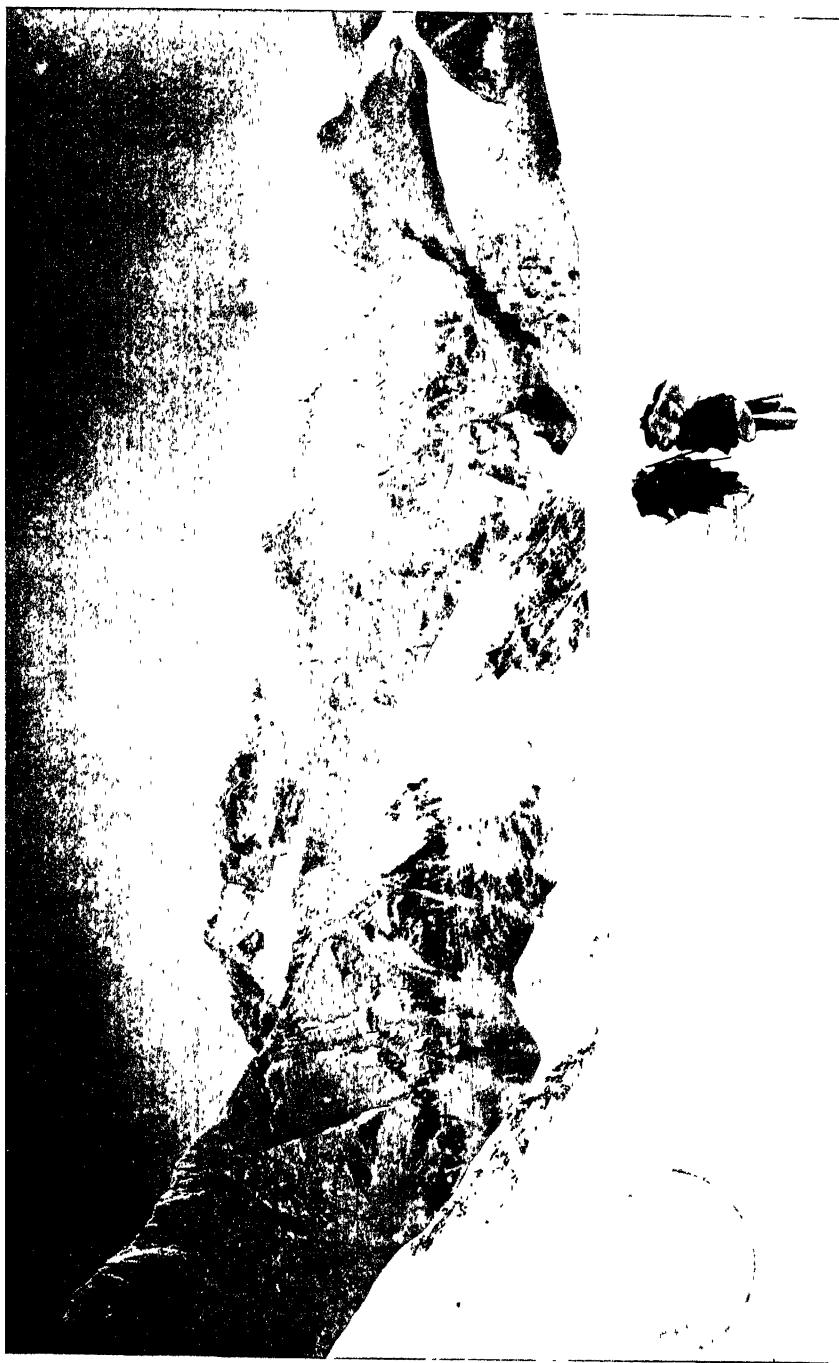
On the whole I am inclined to believe that our pass was identical with Rinsing's. The only argument for holding it to be a different and a new one is the surveyor's own statement. But to me it seems not improbable that he mixed up in recollection, or in conversation, the view we afterwards had from the Chunjerma La with that from the Jonsong La, and that at the moment of reaching the top he was, as any one well might be, staggered and bewildered by the apparent blind alley of snow and ice which met his eyes. His conduct might be accounted for on other grounds, consistent with the working of an Asiatic mind. Major Waddell has borne strong testimony to the dread of trespassing on Nepalese territory, and particularly of

introducing Europeans into Nepal prevalent among the natives of Sikhim. Rinsing may possibly have been anxious to deter us from carrying out our proposed route. He might naturally believe that in so doing he would earn the approval of his official superiors. The alternative theory is that Rinsing, as well as Chandra Das, crossed the ridges west of the Jonsong La, from the glen that joins the Kangchen Valley at Ramthang to the head-waters of the Zemu. For Rinsing's extraordinary mistake as to the Chortenima La I am quite unable to account.

The Signori Sella were at the time more impressed than I was by Rinsing's very positive statements, and they argued fairly and forcibly enough that to persevere in the face of our guide's opinion would be injudicious, and might lead to our exposing our train of coolies and ourselves to unjustifiable risk. Garwood, on the whole, agreed with me in thinking that we ought to persevere; Mr. Dover was neutral. A prolonged argument was hardly possible in the circumstances. A keen draught blowing through the gap helped to shorten the debate. I felt compelled to exercise my right of final decision; and gave orders that the caravan should go on. At the same time I offered to send back Rinsing and half our followers with the Signori Sella should they prefer to act on their own judgment. This suggestion they, very much to my relief, declined.

The word *forwards* was given, and the leading detachment moved on, glad to get out of the cold blast. It was one of the very rare occasions on which we encountered any wind in the High Himalaya, where at the time of our journey the atmosphere was as a rule absolutely still. The breeze carried away Garwood's hat. Fortunately I was able to give him half of my double wideawake. I did not feel the loss; from sun-heat we never suffered seriously

BELLOW THE JONSONG LA—NEPALESE SIDE.



in the mountains, except on the memorable morning after the great storm.

The first descent was steep. The direct course was barred by snowy cliffs and chasms, but they were easily turned by a bank of scree on our left. Below these we skirted some broad crevasses or rather open bowls in the névé. The surface of the first snow-plain was fairly firm, but we soon returned to our wallow ; the next, lying only a few hundred feet lower, was again loose and floury.

Before our eyes we had a picture of absorbing interest, a view no European had ever seen, the north-western face of Kangchenjunga. From this point of view, as from all others—except the Guicha La—it appears as a colossal screen. But here in place of gigantic rock precipices, it shows a snowy face. Long terraces of névé spread under its highest ridge. When these have been gained, the final climb will present no insuperable difficulties to hardy mountaineers. Altitude, or rather its effects, apart, our first impression was that Kangchenjunga is an accessible mountain on this side. But I believe it to be a perilous one, except to experts who will take trouble to study beforehand the tracks of avalanches. We saw none fall, but the ascent of Kangchenjunga will probably be attempted at an earlier, and, in this respect, more dangerous season of the year.

The Sellas stopped to secure some photographs, among the highest ever taken (20,000 feet), which proved perfectly successful. Maquignaz, Garwood, and I went ahead. Maquignaz stamped a track as long as he could ; then Garwood tried, and soon had enough ; my trial was even shorter. We forced our way slowly downwards, but it soon became apparent that the first rocks fit for a bivouac lay too far off to be reached before nightfall by our widely scattered and straggling train. On either hand we had

rock-precipices or tumbling bays full of huge seracs. The shadows were spreading fast across the snow-field, and little black companies were still on the pass far in the rear. In the middle of the glacier, in a shallow trough, we came on a dell full of snow hummocks. Similar névé castles may be seen occasionally in the Alps, and are often represented in pictures of the Arctic Sea. We resolved to pitch our tents among them. The weather fortunately remained perfect; mists would, of course, have added greatly to our perplexities and difficulties. The scene was a strange one. One of our coolies described it afterwards as a village in the snow. Our small tents were pitched in the natural lanes between the big ice hummocks; the oil-fires were lighted; the blankets and sleeping-bags were spread.

Soon the shadows deepened; the light faded from the sky; the cold became intense. Planets brighter and nearer, it seemed, than their wont hung in the blue vault like tiny, solid balls; the thin air vibrated with the faint light of far-off suns. We seemed to stand on the verge of interplanetary space in a region where organic life had ceased and there was no more room for death, where the only existence outside our own was that of the Universe. Such were the vague and inexpressible feelings which underlay and mixed curiously with the practical impulses of the moment.

It was too cold for any prolonged star-gazing. Inside my tent the thermometer showed 27 degrees Fahrenheit of frost, and the glass of milk by my bed- (or rather bag-) side was soon frozen solid. Silence fell on the camp, even the coolies' tongues were hushed. The sound of an occasional avalanche from the cliffs of the Jonsong Peak rang from time to time through the stillness like a distant salute.

I slept fairly, but dreamt wildly. Early awake myself,

I anticipated that here at least it would be easy to enforce an early start. I fancied that in their own interest our men would be eager to endeavour to reach grass and fire-wood before nightfall. But once more my efforts—or rather our factotum's, Mr. Dover's efforts—to this end, only made matters worse. In such a situation the arrival of the sun's beams over the eastern range was eagerly looked for. It was an exquisite moment, there was light everywhere, the atmosphere was translucent. The white virginal landscape was suffused with a radiancy inconceivable to a dweller in the plains.

We found on inquiry that our muster-roll was far from complete. Some of the stragglers we had expected to come in on the previous evening were still missing. We could see no signs of them, no black specks descending the deep groove we had left in the spotless snows. The missing men had doubtless bivouacked on the rocks on the other side of the pass. We thought it right to send back a Gurkha to look after them. This will sound in Alpine ears a most irregular and reprehensible proceeding. To let a solitary man traverse a névé is a breach of one of the most elementary rules of the craft of mountaineering. I should be very sorry to commit myself to any general statement that the rule does not apply in the Himalaya. I would rather limit myself to our own particular experience, that the névés on the Jonsong La were so little crevassed when we traversed them that the systematic neglect of the rope by our party did not lead to any approach to a mischance. The Gurkha seemed, as I watched him through field-glasses, almost to run up the last slope, a remarkable performance at over 20,000 feet, and a fact which should be taken into account by theorisers on mountain-sickness, who like most theorisers are very often slow to recognise facts which do not fit in with their preconceived theories.

As a party we suffered most from that troublesome affection at 13,000 to 15,000 feet, on emerging from the sub-tropical valleys and reaching the glaciers ; the subsequent change to 20,000 feet affected us much less. It was as if one had felt the rise from Cadenabbia to the Engadine more than the rise from Pontresina to the top of Piz Bernina ; an experience, I fancy, not unknown to visitors to Canton Graubünden.

The Gurkha pioneers kept up their courage and their energy, but this was not the case with all the coolies. The majority of them, indeed, after they had been persuaded to take down their tents, engaged with almost all their habitual ardour in the inevitable wrangle over the distribution of their packs ; a wrangle, the force, the length, and the infinite variety of which no cold could check or altitude diminish. The sagacious and critical reader will naturally wonder why the loads were not apportioned once for all. Despite our utmost endeavours we found it impossible, in face of the extreme persistency and ingenuity of our men, to effect this. The excitement of uncertainty as to their burden's weight, the pleasure of outwitting and twitting one another, was part of the day's sport which they were determined not to sacrifice. It made life less monotonous to them. Thinking all were, or were on the point of being got, under weigh, I had myself started and waded about a hundred yards, when Signor Vittorio Sella called me back to inspect some half dozen of our men, apparently in a very sorry plight, and proclaiming themselves unable to move. With the help of his brother, Signor Erminio Sella, we looked the invalids carefully over. In some cases their feet, owing to a reluctance to wear the native boots we had provided, were more or less frostbitten ; in others the altitude and the cold had induced various ailments. Signor Erminio bound up the sore feet in thick



CAMP BELOW THE JONSENG LA

cloths, and some stimulant was given all round. At last the party were all got off, including one or two notorious malingeringers who always shammed in order to get the lightest loads.

We plodded slowly down the deep snow valley between the mountain walls. Jannu gradually sank out of sight, but the huge ridges and névé terraces of Kangchenjunga still seemed to block all exit. The further we descended, the higher and more forbiddingly they towered against the sky. Ice and rocks were on all sides of us; frozen cataracts poured down on our right; on our left, south of the buttresses of the Langpo Peak, a broad white bay opened in the range towards Sikkim. Below its junction with the tributary from this recess our glacier bent westwards, thrust aside by a broad, precipitous, level-topped buttress of the peak we had called the Pyramid.

From our prison-house we could still see no visible outlet, not even a hint of where one might be found. The mountain-sides closed in on either side of the ice-choked ravine. At the end of the vista rose the overpowering mass of Kangchenjunga. As we approached an angle where the hitherto smooth current of the snows became broken like the rapids of a stream into confused waves, I was suddenly aware of a winged messenger from the outer world coming towards us. A tiny wisp of white vapour floated into sight quite low down between two apparently connected cliffs. We no longer needed to walk by faith. Where this child of the lowlands had found its way into the sanctuary of the snows, we should find our way out to its birthplace in the valleys of Nepal.

At the angle the glacier became impassable, a maze of huge ridges and furrows, and we had to take to the long slope of broken boulders that had fallen from the cliffs on its right bank. Buried in snow though they were, they

offered a better resting-ground than the rapidly melting surface of the glacier, and our coolies took advantage of them for a prolonged halt. Half of the troop, however, had already stopped in the rear to cook the breakfast they had not been allowed to linger for at our start. I waited and saw, as I was told at the time and still believe, all the men who had slept in camp, all, that is, except the rear-guard our Gurkha had gone back over the pass to look after, off the ice. One or two who were visibly ailing had their loads lightened.

We spent the whole afternoon in traversing an abominable slope of large and often unstable stones, over which we scrambled, sedulously balancing on boulders that tipped over with our weight, or falling into pitfalls masked by the treacherous snow. A moment's heedlessness, or a temporary absorption in scenery, was promptly repaid by a shrewd knock and bruise. Where some steep gulley ran back into the cliffs a bounding block from time to time clattered down, leaving behind it a trail of dust. This mixture of moraine and screes was the most trying piece of walking for laden men we met with on our journey. The whole afternoon was spent on it, and the shadows were lengthening when we came to another angle where a broad tributary poured in on the right of the main glacier, which again bent more towards the south. Here we had to descend across an enormous moraine on to the ice.

Its surface was as tormented as an angry sea. The frozen waves rose from fifty to a hundred feet high. We wandered circuitously along their crests, which were divided by hollows modelled into blue grottoes, or filled with pools of steel-grey water. We were never brought altogether to a standstill, but we seemed to go round as in a labyrinth rather than to move on.

The hope of reaching a camping-ground on solid sun-

warmed earth had to be given up. The first tolerably level ice-flat must again serve us for our bivouac. We had only descended some 1500 feet in the day; by the map I calculate we cannot have advanced more than four miles. But the corner under Kangchenjunga which we had seen the mists creep round was now well within reach, and we felt certain that the next day's march would bring us to turf and fuel.

The weather most fortunately was still fair, and as soon as the sun had set and the lowland-born vapours had withdrawn from the summits, the sky became clear and frosty. Our night was naturally less cold than the preceding one. But the next day's march was, in its earlier and longer portion, a repetition with variations of its predecessor. Nowhere could we find any smooth and level surface. Imagine any rough, uncrevassed bit of Alpine glacier with all its features magnified. We splashed along in the watercourses at the bottom of narrow dells, we crossed or skirted the slippery sides of interminable banks, now bare ice, now lined with rickety boulders. In the common phrase it was always 'the same thing over again.' We had before us a fine example of the erosive action on ice of sun-heat and surface streams.

The most obvious distinction between the glaciers of the Alps and those of Sikkim—at any rate to the traveller—is in the formation of their surfaces. In the Alps, glaciers, when not steeply inclined, are, as a general rule, more or less smooth. Take for instance the Morteratsch Glacier. It affords in its lower portion a pleasant exercise-ground for invalids and children, Polytechnic tourists and German honeymooners. Such obstacles to progress as there are take the form of deep cracks or crevasses. In Sikkim the superficial features of the ice are very different, and the difference is all to the disadvantage of the

explorer. The surface of the glacier is an irregular labyrinth of heights and hollows. Part of a common, such as Hampstead Heath, broken up by disused sandpits, might serve as a small-scale model of the ground we had to traverse. Crevasses we hardly met with, though they existed in plenty on some of the secondary glaciers we passed on either hand. The drainage of the glacier seemed to be carried mainly along its surface, and I did not notice a single 'moulin.'

A secondary glacier that descended from the range on our right offered a strange and fantastic spectacle. In the Alps there would have been an ice-fall, that is, a maze of crevasses. Here we were confronted by a multitude of ice-pinnacles I may best compare to the earth-pillars found where friable slopes are subjected to severe atmospheric denudation. Tier above tier against the mountain-side rose the frozen cones and spires, a ghostly crowd illuminated by the sun's rays. I do not presume to dogmatise on the causes that produce this picturesque phenomenon. But we may assume that most of the distinctive features of the Sikkim Glaciers are due to the difference in climatic conditions between the Himalaya and the Alps. The former are exposed to greater variations of temperature, to fiercer sun-heat, below a certain level to heavier rainfalls. The frozen stuff, nôvâ, or ice, consequently becomes more plastic than in the Alps, it cracks less when subjected to tension, while its surface is not only modelled by evaporation, but also by the action of the drainage, which as a rule fails to find its way through moulin to the bed of the glacier. The amount of water on the surface of the middle reaches of the Kangchen Glacier was surprising. *Sloppy and stony* are the adjectives that present themselves in my Diary as most directly descriptive of my impressions of them.

A large part of this day, as of the preceding one, was spent in waiting for our followers. These enforced halts had their advantage, for they gave us ample time to study and appreciate the marvels of Nature. The grey cliffs and snowy terraces of Kangchenjunga itself, always in front, grew more imposing as we advanced. We never tired of gazing at them and speculating how best they might be attacked by more fortunate mountaineers.

It was long after midday when we reached the point at which our glacier, closely penned in a narrowing trench, made a plunge downwards to the very base of the great mountain, there to join itself with many sister streams and form a broad ice-river. For some little distance we found an easy path along its moraine. Then, with sudden confidence, the first sign of local knowledge Rinsing had shown since leaving the pass, our plucky pioneer stepped to the front and invited us to climb up a steep bank built by the glacier in days when it was more voluminous. On its top we found patches of soil and scanty turf and faded flowers, mixed with melting snow-beds. We had returned to a habitable and living world. A sudden cheerfulness seized the advance guard. A sense of escape, of having come out of their peril, spread itself visibly among the coolies. Their faces brightened, they became once more talkative. Our feet no longer hampered by the soft subsidence of clinging snow, we all stepped out, full of the hope of reaching a level spot, provided with fuel as well as dry turf, before nightfall. We were walking along the crest of an ancient and now grass-grown moraine. Soon, after the fashion of Himalayan moraines, it left room for a tiny shallow dell between its crest and the hillside. Having satisfied ourselves that there was enough—if only just enough—scrub to serve as firewood, Garwood and I agreed to pitch the tents and wait for the rest of the party. The

coolies who were with us raised a creditable imitation of a British cheer as they threw down their loads. The Jon-song La was behind us.

Their comrades dropped in slowly. Presently we were alarmed by a message that Signor Vittorio Sella was ill, and required assistance. Fortunately he appeared in person soon afterwards, not much the worse for an indisposition which he attributed rather to diet, to 'too much cold boiled yak,' than to the effects of altitude.

CHAPTER IX

THE VALE OF KANGBACHEN

COMPARED to the previous six nights when our tents had been deeply imbedded in snow, our situation was, from the practical point of view, a luxurious one. Our camp was established on a green shelf between the mountain and the trunk glacier, which was hemmed in on three sides by mighty snow-peaks. Behind us, on the north, the slope rose too steeply to allow any view of what lay above and beyond it. We should like to have lingered and to have explored at least the approaches to Kangchenjunga. But the September snowfall was still heavy on the range, and the difficulties it had already thrown in our way had so delayed our march, that we had to consider carefully for how many days our coolies' food would hold out. We were, moreover, too uncertain of what our reception in the Nepalese villages lower down the valley might be to justify us in counting on them as sources of fresh supplies. A long morning, therefore, was all the time we ventured to dedicate to the contemplation of the wonders that surrounded us.

I have adopted from Rinsing's sketch-map of this district the name Pangperma for the spot we had reached. Reference to our own map will show its importance, both for topographical and picturesque purposes. It is situated at a point where the glacial drainage of the greater part of the north-western face of Kangchenjunga unites with

that of the chain extending to the north as far as the Jonsong Peak. Four distinct ice-streams, each made up of many tributaries, here unite to form a trunk glacier of the first magnitude. *Mutatis mutandis* we were camped at a Himalayan Tacul, the counterpart of the corner above the Montenvers where the Mer de Glace, properly speaking, begins.

Immediately below the spur of the hill we had rounded in our descent, the glacier that had been our guide and path—though a rough one—tumbled over in a narrow fall, foul with the scattered remnants of the upper ridges. From the east—from the range that alone separated us from the basin of the Zemu Glacier—two glaciers flowed down deeply cut troughs. At the head of the more southern the 21,000 feet gap of the map, which we had recognised from the Sikhim side, was again visible. The approach to it from the Kangchen Glacier is by a long rock-slope, which, judging from the way in which the fresh snow now lay on it, may be accessible to a party of climbers. Whether coolies could be got over it is a question which must be left to more fortunate explorers to decide. This gap is a very important link in the Tour of Kangchenjunga, and but for the snowstorm we should certainly have reached its top from one side or the other, even had we been unable to cross it with our baggage-train.

Above this gap and south of it the ridge rose abruptly to the double peak I have called the Twins. Though separated from Kangchenjunga by a broad snowy saddle, it may be considered a buttress of the greater mountain in the sense in which the Aiguille du Midi is a buttress of Mont Blanc. From its summit a long spur projected towards us, crowned by several snowy domes or half domes. It ended in a curiously jagged, low rock-ridge that from

some points of view serves as it were for a footstool to the great white throne above. A similar low spur with a crest equally broken into teeth is conspicuous above the Zemu Glacier. I infer that a belt of granite, disposed like the Chamonix Aiguilles by perpendicular joints to toothed or needle-like forms, runs parallel on its northern flank to the highest line of upheaval of the Kangchenjunga group.

The next glacier, that immediately opposite our camp, was the most remarkable and interesting of the tributaries which united beneath our eyes. It descends from the recess between the northern and western crests of Kangchenjunga. It has its origin in a snow-plateau, or rather terrace, lying under the highest peak at an elevation of about 27,000 feet, that is only some 1200 feet below the top, the final rock-ridges leading to which look very accessible. Below this terrace, however, stretches a most formidable horseshoe of precipices, of what at least the ordinary traveller would describe as precipices. Since, however, this glacier affords what is in my opinion the only direct route to Kangchenjunga which is not impracticable, I must qualify the word. Under the critical eye of the mountaineer the precipices resolve themselves into a series of icy banks and short cliffs. The ice-banks are formidably steep and riven by crevasses; the rocks do not look easy, while the vertical ascent, some 6000 to 7000 feet of difficult ground, is a very formidable element in the problem.

But if there were no other danger to be reckoned with, a bold mountaineer need not be deterred from attacking the ascent by its length and steepness, and I should be sorry to risk a prophecy of his failure. His chief difficulty would be on the lower steps of the cirque; here I believe he should search to the left towards the saddle that connects Kangchenjunga and the Twins. There are rocks for

a bivouac on the high plateau, and the final climb would be practicable, if the difficulties of altitude do not supervene. But—and it is a ‘but’ I desire to emphasise—the routes I can discern by careful study of my companions’ photographs are more or less exposed to the worst, because the least avoidable by human skill, of all mountain risks. Steep places will have to be surmounted by a series of slopes, in which the crevasses and seracs have been filled or beaten down by avalanches from hanging ice-cliffs above, and when the peril of this staircase has been run, a way must be found along a shelf similarly exposed. The whole face of the mountain might be imagined to have been constructed by the Demon of Kangchenjunga for the express purpose of defence against human assault, so skilfully is each comparatively weak spot raked by the ice and rock batteries.

I failed at the time to trace any route on which skill could avert this danger, and, with Mr. Mummery’s fate before our eyes, this approach to Kangchenjunga cannot be recommended, even to the boldest climbers, until such a route has been discovered. I am not prepared to say that this may not be done. Perseverance and good judgment may meet their reward. It is hardly probable, however, that any coolies will be found to carry the necessaries for two or three nights’ encampment above the lowest ice-fall, and the peak is hardly likely to be gained with less than two nights spent on its actual face. For the highest ascents in the Himalaya the traveller must be provided either with Alpine porters, or with some of Colonel Bruce’s specially trained Gurkha mountaineers. Next to climate, transport is the most serious physical obstacle the assailant of the loftiest peaks of the Eastern Himalayas will have to encounter. The effects of altitude will, I believe, be found in comparison a lesser hindrance.

The glacier we have been examining does not draw all its supply from the upper shelves of Kangchenjunga. It is also fed by the snows in a recess lying under the western summit (25,780 feet). This basin is apparently separated by a relatively low crest from that of a large glacier which, issuing from between Kangchenjunga and Jannu, joins its terminal moraines to those of the Kangchen Glacier many miles lower down the valley. This flat-topped crest connects with the western face of Kangchenjunga two terrific peaks. I use the adjective advisedly. Thin, keen wedges, black or grey below, flinging down the sunshine from their icy crests, they tower at either end of a curtain of precipices which rises vertically above the dark waves of the main glacier. Set the Eiger on the top of the Wetterhorn cliffs and you will get some idea of the nearer summit. Their rocks appear to meet the level glacier at a right angle, so that whatever falls from them falls straight on to the ice-sledge and is carried away, leaving no talus or fans of débris at the mountain's base.

It has been easy to catalogue the several parts that composed the astounding landscape before our eyes. But it is, I fear, impossible to convey to the reader any notion of the general effect. The individual features of the landscape were not unfamiliar to mountaineers ; the Himalayan giants are, with a difference, greater Alps ; a glacier is always a glacier ; but the scale was far larger and the impression left on the mind one of stupendous vastness. The height of Kangchenjunga above us was about that of Mont Blanc above Entréves, or Monte Rosa above Macugnaga, but our position with relation to the ice world was, as I have already said, similar to that of a tourist at the Tacul. Perhaps the Alpine traveller will best succeed in realising the effect by picturing to himself what the Mont Blanc range might look like from Entréves, if a great glacier swept round the Mont

de la Saxe and then down Val d'Aosta for some ten miles as far as Morgex. It is no wonder that the Nepalese yak-herds who penetrate to this spot should regard it as the special haunt of the Spirits of the Mountains, a place where 'Gods and Saints dwell in great numbers.'

Our tents commanded the best view of the upper corridor of ice leading to the Nepal gap with the Grands Jorasses-like summit of the Twins on its south. But the most convenient, and, on the whole, the most picturesque site for a camp is a mile lower down, where, between the glacier and the mountain-side, a grassy meadow dotted with juniper bushes and a little tarn offer all that a mountaineer can desire. A fortunate gap in the moraine admits and frames a view of the snowy stairs leading up to Kangchenjunga, which are here exactly opposite the spectator.

Our camp (17,260 feet) was just on the existing snow-level. The snow lay in patches round it; 500 feet lower the ground on the sunward-facing slopes was bare. We were released after our week's ordeal from the white glare and the constant absence of firm or visible foothold. But it was clear that in the present condition of things in the upper region and wherever the sun did not penetrate, it would be impossible even for a light reconnoitring party to reach and return from the Nepal gap in a day, while to attack Kangchenjunga itself was beyond the power, had it been within the plans, of our party. We agreed therefore to give up the morning to photography and scenery and to stroll on a few miles in the afternoon so that we might have no difficulty in reaching the summer village of the Kangbachen Valley on the following day.

After our recent experiences on the great pass our march down the valley was a luxurious progress. We were not only on firm ground, but for the most part on soft turf. Sloping pastures spread along the base of the northern

range. Their flowers were mostly seeding, but large blue gentians and beds of edelweiss were still in bloom. High up on our right stretched jagged ridges from which small glacier-born brooks trickled across our path. On our left the huge glacier rolled its ugly rubbish heaps, concealed as a rule behind the green embankments of ancient moraines. Above it rose the great rock-screen and the two ice-peaks we had admired from our camp, under the base of which we were now passing. 'Burhel' were sighted, and a hunting party sent out. Beyond an alluvial fan, kept in an untidy condition by slender streams, we found a fascinating little meadow snugly ensconced between green banks, the dis-used basin of a morainic tarn, which tempted us to camp. The valley in front here bent southwards, and the vista was closed by the snowy peaks beyond the junction of the Kangchen and Thangchen torrents. Nango and its 21,027 feet neighbour, important to us for mapping purposes, because they are visible from Darjiling on the extreme west of the snowy range, had come into view. On the right and nearer us rose a very sharp rock-tooth, part of the range between the Thangchen Valley and a nearer glen, the opening of which was only a mile below our camp. On our left a great wall of precipices still stretched above the glacier. A strange rock obelisk marked a projecting angle or buttress in front of us. The afternoon had been misty, but towards its close the vapours melted away and the sunset was extraordinarily beautiful. The atmosphere was more luminous and the distances deeper in colour than in the white altitudes we had left. During the day stragglers constantly came in, and I was given to understand that our coolies were all accounted for.

Next morning we left our comfortable camp with some regret, and strolled on across level, or almost level, grass land. In half an hour we came to a cluster of stone huts,

the first dwellings, with the exception of a ruinous cattle-shed in Lhonak, we had seen since leaving Lachen three weeks before. These hovels mark a summer grazing-station of the Kangbachen folk. They were, and had been for some little time, deserted. The proper name of the place seems to be Ramthang. Rinsing calls it Lhonak on his map; a name which I reject, as it must tend to confusion with the district of that name. I have little or no doubt that a pass or passes exist from this valley to the north, and that it was by one of them that the Pundit Chandra Das crossed in 1879 on his way to Tashilumpo. He called his pass at the time the Chatang La; the Indian maps mark a pass across this part of the chain with the name Chabok La.

The features of the junction of the two valleys are somewhat peculiar, and to a great extent the result of past glacial action. The trunk glacier from Kangchenjunga, in sweeping past the wide mouth of the tributary glen, has raised across it a series of huge dykes which at one time converted its lower level into a lake. The Chabok stream has subsequently worn itself an issue between the hillside and the moraines deep enough to drain the lake, and now wanders at will through the flat marshy bottom of its ancient basin. Higher up, rough ground, probably moraine, appeared as a foreground to glaciers and a snowy range, without any very distinctive features, in which it has its source.

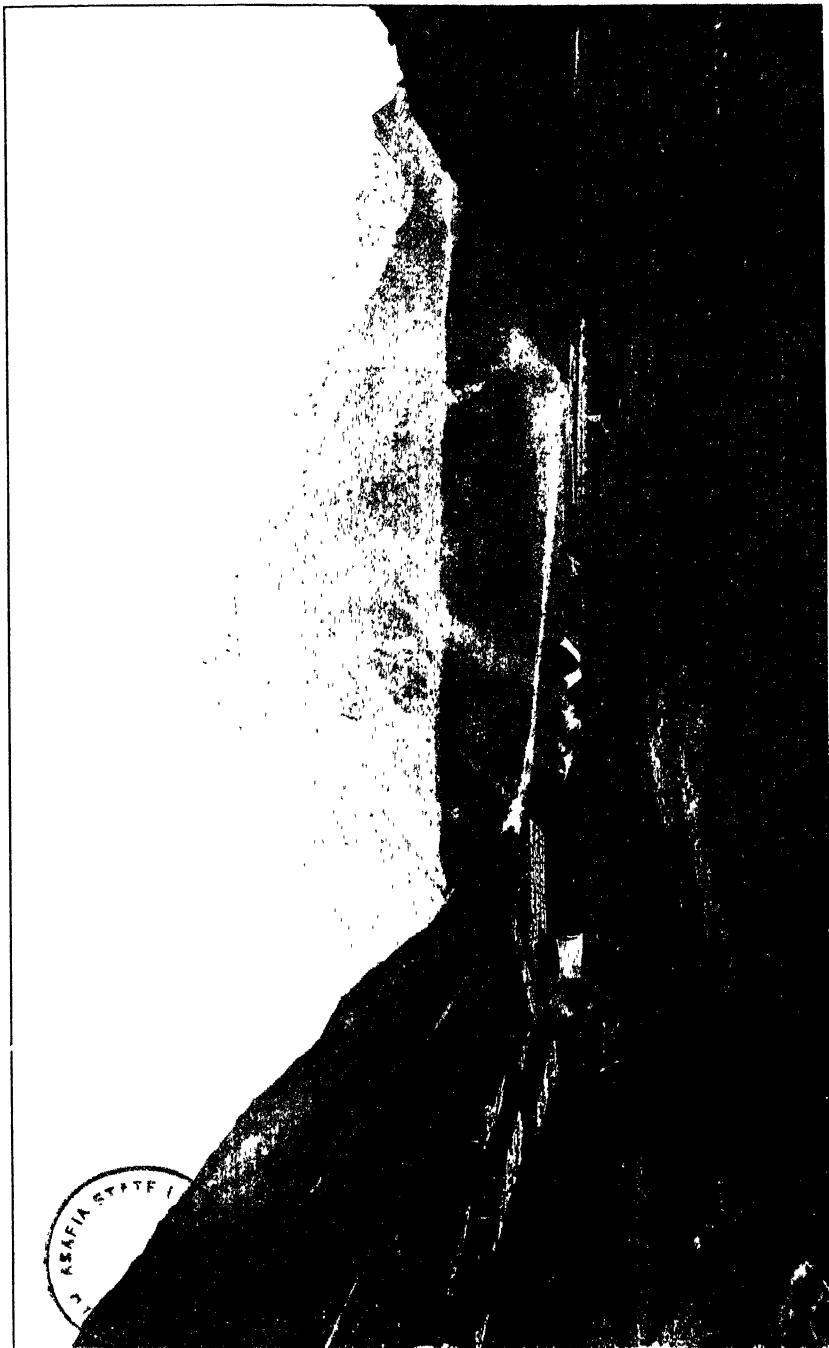
Our track now for the first time became a distinct path. We soon left the Chabok Chu in its narrow channel on our right, and wandered up and down over the gently undulating surface of ancient moraines long ago cloaked in dwarf rhododendron bushes and flowery grass. Here and there clear pools of water filled and brightened the hollows. Nature, one might fancy, had set herself to lay out an Alpine garden on a large scale in this charming spot, which

formed an oasis among the stern cliffs, treeless slopes, and icy peaks that still surrounded us. Our constant companion, the great glacier, was still on our left, but so disguised under its rocky burden that a Pundit could hardly be blamed for calling it a moraine. Presently we came opposite a deep gap in the cliffs of the Kangchenjunga Range, and looked up a long glacier trough to the snows that hang along the western face of the mountain. I should like to have made a closer examination of this glacier, which I propose to distinguish as the Ramthang Glacier. It undoubtedly comes down from the 22,500 feet gap between Kangchenjunga and Jannu, visible from Sandakphu and the heights of the Singalila. It may possibly afford an access to the western peak of Kangchenjunga, which, however, is separated by a ridge of enormous length and many inequalities from the highest peaks. This ice-stream pushes ridges of white granite boulders out into the valley, and a few years ago must have actually joined the Kangchen Glacier, which at this point at last yields to the sun's rays and releases its turbid torrent. We found ourselves caught in the fork between this and the Chabok stream. A path was visible on the right bank of the latter, but the bridge which Rinsing told us was usually found here had disappeared. The Chabok Chu was barely fordable, and we had much trouble in finding a spot where it could be made passable for the coolies. Some pioneers leapt its boulders, and fruitless efforts were made to span a narrow space between two great blocks with one of Garwood's Spitsbergen sledges, which had, so far, failed to serve their proper purpose. This expedient having proved vain, we turned to a more modest endeavour, and ultimately succeeded in constructing a passage over a broad rapid, where, with some splashing and wetting, the whole party got safely across.

At this point the scenery underwent a change. The

valley no longer looked glacial, the U was changed into a V outline. Either ice had never reached lower, or, as is more probable, water had for a sufficient period had free scope to alter and obliterate the old shapes of the hillsides by deepening the trough, and creating taluses. Our path was a terrace along the steep northern slopes, which, in the absence of timber, soon became monotonous. A fine waterfall tumbled from the cliffs above us. Waterfalls are rare round Kangchenjunga, and this one seems to have excited somewhat exaggerated admiration in the mind of Chandra Das on his 1879 journey. He saw it however in early summer, when its volume was doubtless far greater. According to the Babu it is known by the name of the Khan-dum-chu or Fairy Waterfall, and is accounted 'the loveliest river in this part of the Himalayas.' He adds the surprising statement that its roar made him deaf for nearly two hours! Beyond the gap of the Thangchen Glacier massive peaks and precipices opposite us, the outer bastion of the Kangchenjunga Group, continued the range that had overshadowed the valley from its head. Mists, however, enveloped their crests, and for several miles there was less than usual to look at. A small pasture and some empty sheds were an agreeable incident, a foretaste of life, if not of civilisation.

We now approached an angle where our valley bent more directly south and another considerable valley joined it. The brow above the meeting of the torrents was decorated with numerous prayer-flags waving on tall poles over a group of stone Chaits. On reaching it we looked down upon a village of substantial stone huts, very similar to those found in the Graian Alps. Flags and shrines lined the zigzags that led down to them. Beyond lay some level fields and meadows through which a clear and tranquil stream flowed between mossy unravaged banks. The



KANGBACHEN.

WITH JANNU AND THE DYKE OF THE JANNU GLACIER

opposite hill was clad in a grove of dwarf alders. After our long wanderings in the white wilderness of snow the landscape struck us as delightfully green, pastoral, and domestic. But there was no sign of life, no sound audible above the murmur of the streams. The flocks had descended, the scanty crops had been reaped, and the hamlet was as desolate as an alp in winter. We preferred to pitch our tents rather than to play the burglar in order to test the resources of the carefully closed barns.

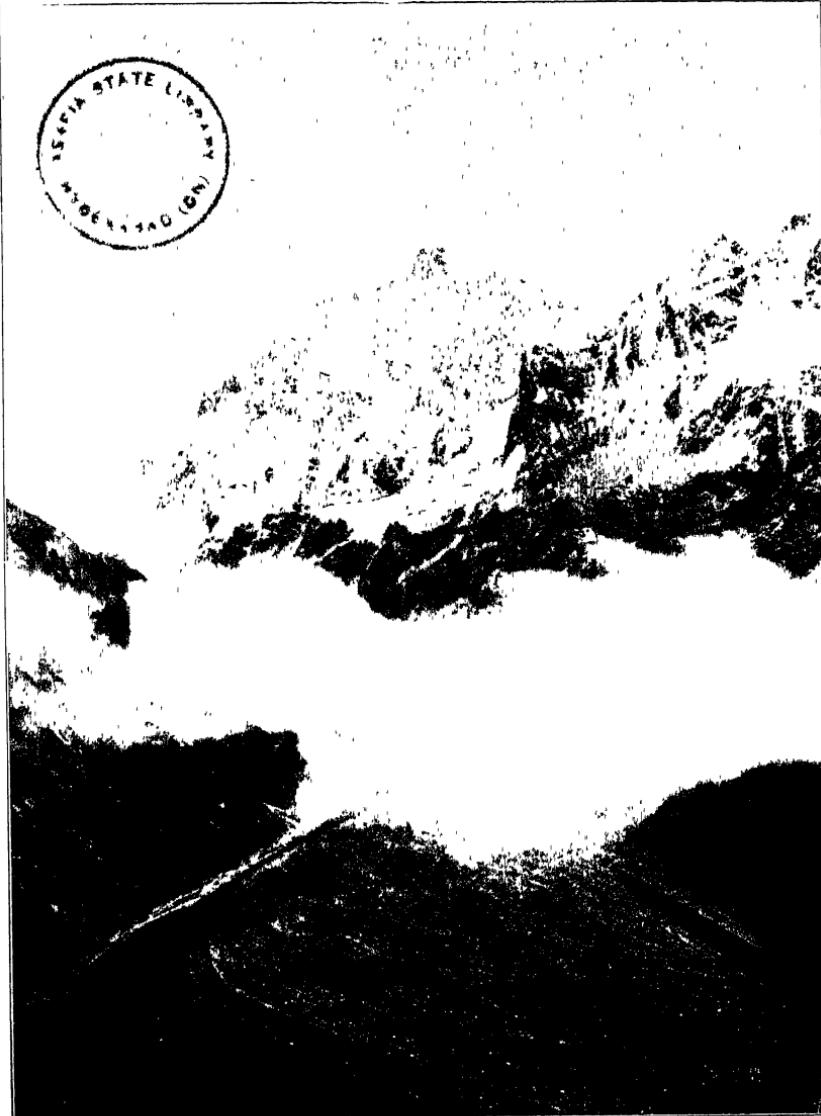
In some respects we were relieved to be able to make another stage of our journey through Nepal without any risk of opposition. Yet we would have risked something to witness such a scene as is described by the always entertaining Chandra Das. 'We here witnessed a grand offering made to the Kangchan peak by the residents of Gyunsar and Kambachan. The firing of guns, athletic feats, and exercises with the bow and arrow form the principal parts of the ceremony which is believed to be highly acceptable to the mountain deity. The youth of Gyunsar vied with each other in athletic exercises; the favourite amusements of their elders being quoits, back-kicking, and the shooting of arrows. We also contributed our share to their religious observances. The scene reminded one of the Olympic games, and like good Buddhists we too paid our obeisance to Kangchan, the Buddhist's Olympus.'

The afternoon mists did not disperse till after dark, and we were unable to see much beyond the brown lower slopes, and the long rampart line of a gigantic and almost level moraine which ran at right angles across the valley, about a mile lower down, presenting a green bank surmounted by a grey coping of granite boulders and dirty ice.

At dawn the veil was lifted. Close at hand, and throwing their cold shadows over us, two mighty peaks,

the nearer pyramidal in form, the further double-headed, rose in tiers of unmitigated precipices, encrusted with the dust of the avalanches of new snow, which, unable to find any resting-place on the higher shelves, had poured down their face. Behind this range a still mightier mountain, the famous Jannu, showed its south-western ridge and the rock-tower, which distinguishes it from every point of view, near or far. I took a hasty stroll before breakfast through the brushwood to a brow whence Signor Sella afterwards secured a panoramic view. From this point the whole of Jannu was visible, in outline an enormous dome of rock, vast in bulk, symmetrical in form, and crowned by an admirably proportioned lantern. Behind it a curtain of white cliffs, closing in the head of the glacier which had formed the dyke across the lower valley, ran back towards the unseen Kangchenjunga. We looked right up the ice-stream, and down on its surface, a succession of dunes of granite débris. In their dull monotony they formed a contrast to the snow in the gaps between the three peaks which flashed back the early sunbeams as they shot across the ridges. The view was sensational. We felt the rare rapture of the adventurer who has discovered something worth all his pains.

My eyes from time to time found rest in retracing the zigzags of the path by which I had mounted through autumn-tinted brushwood and long grass full of the withered stalks of spring flowers until they lingered on the quiet meadow and purling stream, above which, against the background of stone barns, triangular prayer-flags, moved by the chill morning air as it fell from the frozen heights, flapped out slowly on their lofty masts, while the smoke of our camp-fires, pillars of a wandering hearth, curled idly upwards.



JANNU FROM ABOVE KANGBACHEN.

There was more to be seen from my station, two valley views, interesting to the topographer as well as to the pursuer of the Picturesque. I stood as it were at the north-western angle of the Kangchenjunga Group. Looking down the course of the Kangchen my eyes raked its western flank. Looking up stream in the direction from which we had come, there was nothing to obstruct the view of the lower reach of the Kangchen Glacier. It was capped by the broad-backed summit, which had risen in front of us on the Jonsong La. To its left (west) the range visible was comparatively low and tame, and here, I believe, lies the pass by which Chandra Das in 1879 reached Lhonak from Kangbachen.

The view downwards was also very agreeable. Below the Jannu Glacier a bright stream gleamed between green banks of forest; distant peaks and snows rose above the further slope, sinking to green hills where a bend in the valley hid what lay beyond.

To this spot we all returned an hour later, when the first of the vapours which had been, doubtless, lying all night over the lowlands swept up the valley, and putting out a long arm, stretched from crag to crag until it formed an arch across the trench of the great glacier. The track again descended to the river, which it crossed by a substantial wooden bridge. On the meadow below the moraine stood a solitary and deserted farmhouse. The water makes its way round the barrier, just as the stream of the Allée Blanche does round the Miage moraines, in a very steep-sided trench under the western mountain-side. The path, often interrupted by the milky streams which break away in more places than one from under the banks of boulders, wanders up and down among the loose remains of moraines, and close to dripping fragments of ice in the last stage of dissolution.

After half an hour's rough walking we rejoiced to reach the limit of this stony desolation and the edge of a beautiful forest. The foot of the Jannu Glacier is 13,500 feet above sea-level. Its ramparts mark a complete and sudden change in scenery. Above them, with the exception of the brushwood on the slope near the village, all is bare rock and turf—the region is one of treeless pastures. Below the glacier the forest begins, a forest of a novel character, no longer the impenetrable tangle of luxuriant undergrowths, or the perpetual canopy of inter-arching boughs of the forests we had left at the head-waters of the Teesta, but a wood such as may be found on the borders of Italy and Tyrol. Silver firs, dark junipers, feathery larches, maples, and mountain ashes formed the happiest mixture of evergreen and deciduous foliage.

To the various shades of green, the brown and gold of autumn were already added. Piles of dead leaves lay among the ferns that carpeted the soil. Clear springs bubbled up between mossy banks and suggested irresistible reasons for a halt and meal. On the right bank, opposite us, a solitary knoll looked as if it ought to be crowned by a ruin: a charming waterfall dashed beneath it; the scenery grew sylvan and romantic. In some respects the Vale of Kangbachen reminded me of the Vispthal. Snowy peaks peer through its ravines; glaciers hang high above its precipitous walls, and send down streams that pierce the forest with their stony channels.

For some hours we walked down this noble valley. The distance from the glacier to Khunza must be about ten miles. At first the forest was only broken by the streams flowing out of clefts in the great buttresses of Jannu. As we descended, the valley-bottom grew somewhat broader and admitted little stretches of pasture beside the torrent. On one of the larger lawns on the

further bank we saw, through a clearing in the wood, some brown huts, and a herd of yaks grazing. They were beautiful animals; brown, dappled, or snow-white, and were decorated by coquettish knots of red ribbon tied behind their ears and elsewhere. One of them, halting midway on a wooden bridge, would have made a charming vignette, had a camera been prompt enough to seize it. We were told that the herd belonged to the Raja of Nepal.

A few minutes later we came suddenly on our first Nepalese, the owners of the farm. We were met by quite a company of men, women, and girls with smiling faces, and, what was better, baskets of various vegetables, eggs, potatoes, and milk. A party of woodcutters at work higher up the valley had seen us in the distance and brought down news that a company of strangers was descending from the Tibetan Passes. Whether the villagers thought it expedient to conciliate the unknown invaders by hospitable gifts, or whether they simply recognised that men coming from that quarter were sure to be hungry and good customers, I am not sure. Anyhow our relations were soon put upon a mercantile footing, satisfactory to both sides. The women and girls were not at all shy, and allowed us to handle and examine the handsome gold and turquoise ornaments, belts, earrings, and amulets with which they had adorned themselves. But they declined to part with any of them, nor could they bring themselves to face the cameras of our photographers. We were surprised, however, at the little astonishment they showed at what was, but for Sir Joseph Hooker's flying visit fifty years before, the first appearance of Europeans in their district, and still more at the readiness with which they accepted Indian currency. The fact that there is a frequent passage to and fro between Eastern Nepal and Darjiling of people in search of employment in the tea-gardens, as well as of

vendors of butterflies and orchids, may go some way to account for our friendly reception.

The excitement of the first encounter for twenty-four days with any human being outside our own party made the distance seem short before we finally stepped out of the forest shade and entered a long level meadow divided by rough fences or low stone walls and studded with brown two-storied houses, resembling in general appearance, and particularly in their shingle-covered and stone-protected roofs, those of the Alps. Each house stood apart in its own enclosure ; flocks of goats roved browsing among the outbuildings.

Remembering certain Caucasian experiences, it seemed to me politic, in order to secure a retreat in case of any future misunderstanding, to traverse the village, if the scattered farms might be so called, and to pitch our tent beyond the last house, near the opening of the side valley through which our further journey must, we knew, take us. Our native companions, and Rinsing in particular, had shown themselves full of apprehension as to the nature of our reception in Nepal, which as much as Tibet is a forbidden land for all European travellers, except officials going to Katmandu and their guests. As I have already hinted I have my doubts whether Rinsing's apparent failure on the top of the Jonsong La to recognise his former pass may not possibly have been a ruse to deter us from venturing beyond British territory.

We had been much amused in the morning by the pains taken by our Gurkhas with their toilette. Their mustachios, which had hitherto only been stiffened by frost, were now waxed and curled in a most ornate and imposing manner. The first effect was unfortunate, for our Italian guide was so overcome by the appearance of a particularly tempting pair that he ventured to tweak

them, and we had to soothe the feelings of the Gurkha by assuring him that the act had been intended as an expression of admiration and respect. For ourselves, we felt some curiosity, if not much alarm, as to the nature of our reception. It was, of course, possible that we might encounter a post of Nepalese soldiers. Taking into account the curious way in which news travels in the East, it would not have been altogether surprising if after our departure from Darjiling some special steps had been taken by the Nepalese authorities to meet the chance of our party entering their country. However, our start had been made so conspicuously in the opposite direction that this was unlikely, and if we did meet with opposition we had a ready resource in the perfectly true statement that we were driven down by the premature snows from the mountains and only asked to be put on the straight track leading back to British territory. At any rate we were bound to come out somewhere, and we had now accomplished my main purpose. We had filled up the blank between Sir J. Hooker's routes on his map and recovered his track. He descended on Khunza from the Nango La, the pass which connects it with the parallel valley to the west, the Yangma.

It is somewhat curious to note how widely our first impression of the scenery of the valley we were descending differed from that of our predecessor. Sir Joseph Hooker writes, 'Of all the mountain gorges I have visited this is by far the wildest, grandest, and most gloomy.' To us, on the other hand, it appeared as an open, smiling vale. The cause of this contradiction is, I think, easy to discover. Sir J. Hooker had come from the Yangma Valley, a comparatively open region. Chandra Das tells us that the name Yangma was conferred on it on account of its spaciousness and numerous flats. We had approached Khunza from the inmost recesses of a mighty centre of elevation, of clefts

and precipices, from the very heart of Kangchenjunga. But Sir J. Hooker's impression is after all the nearer the truth. The height of Jannu above Khunza is 4000 feet more than that of the Dom above St. Niklaus, and the slope is almost identical—1 in 1·97 as against 1 in 1·94. The slope from St. Niklaus to the top of the Weisshorn is however much steeper than that from Khunza to Nango—1 in 1·67 as compared to 1 in 2·63.

Our two interpreters were soon immersed in interminable conversations with the villagers, who had speedily gathered round our tents. Some fresh provisions were a necessity, for we had no reason to count on getting any further supply before reaching Yoksun in Sikhim, full five days' journey, even if we made no halts or excursions on the way.

Our hosts were a sturdy race, markedly Tibetan in type, immigrants from the north. The men were tall and well-built, and showed no traces of hard living, the women were less well-favoured, but I did not see such a prevalence of goitre as is described by Chandra Das. Some had swollen necks, but not of the exaggerated kind common in Val d'Aosta. The dress common to both sexes was a black cloth robe like a dressing-gown, girt at the waist; the women's was longer than that of the men. They wore broad-soled boots, and their legs were tightly swathed. The costume seemed well adapted for a cold climate.

Up to the eighteenth century this district belonged to Sikhim, but it has long been thoroughly annexed to Nepal. In older times, if we may put any confidence in the legends recorded by Chandra Das, its possession was contested by races from different quarters, Nepalese and Tibetans.¹ The upper valley, despite its great height

¹ See Appendix C.

(12,000 to 13,000 feet), may have seemed, on account of its wide pastures and fine forests, covetable as a home, and there is no doubt, I think, that in old times a frequented trade-route ran from it over the passes to Yoksun and possibly continued over the Guicha La and Yumso La in the direction of Lhasa. I do not know enough of the country to venture any positive theories as to routes of traffic. But it ought always to be remembered that mountaineers will go over any number of high passes rather than dip into fever-stricken valleys. Of this I have frequently had experience in the Caucasus.

My companions were occupied in various ways, so I went off on a solitary stroll over the fields and meadows which stretched from our camping-ground along the bank of the river as far as the point where a great mound clothed by luxuriant shrubs stretched across the valley. Mists now concealed the cliffs overhead, and the rural charm of the nearer features of the view was not broken by any hint of the wonders that encompass and overshadow this secluded vale. Where the pasture ended I entered a natural wild garden, dwarf junipers crept over the boulders, various-leaved rhododendrons sprang up in their crevices.

I must quote Sir J. Hooker for the contents of the little nooks that lay sheltered between the scattered lumps of granite. 'They exhibited the withered remains of so many kinds of primrose, gentian, anemone, potentilla, orchis, saxifrage, parnassia, campanula, and pedicularis, that in summer they must be a perfect garden of wild-flowers.'

Fresh springs gurgled up between the thickets, driving what I at first took for churns, but soon recognised as prayer-wheels, one of a gigantic size. I wandered on among the rhododendrons, trying to picture to myself the past splendour of the summer blossom, until I came to the river

at the point where it plunged into a defile. As I looked on the landscape it seemed to me that there was no difficulty in reading its history. The mounds before me that shelter Khunza from the fierce blasts that sweep up every outward-facing Himalayan valley were part of the ancient moraine of the glacier of the side glen, the Yamatari, which here falls in from the east. This glacier had once stretched across the main valley. The meadows which form a platform for the village are the alluvial bottom of the lake that was created and retained by the glacial dam before the river had worked a way past it.

Remounting its pleasant banks, I reached the bridge that leads to the Tassichuding temples and the picturesque houses of the monks, brown cottages with wooden balconies. I did not at the time realise the religious importance of the place, or I should have gone on ; but having no interpreter and being a little anxious as to how affairs might be prospering in camp, I turned back. On the way I examined more closely some of the cottages, which were singularly Alpine in their general structure. More characteristic was the long, low wall of inscribed stones similar to those we saw afterwards at Jongri, Alukthang, and elsewhere. These walls are called *mendongs*, and are common throughout Tibet as far as the Chinese frontier. They are, as a rule, some three feet high and are capped by a rude coping of flat stones which partially protect from the weather the carvings contributed by pilgrims or passers-by. The custom is apparently a relic of nature-worship, of propitiatory offerings to the demons of the locality, although the formulas now employed are Buddhistic.

I had left the camp under the impression that all was going smoothly, and that on my return I should find our reprovisionment had been satisfactorily arranged. It proved, however, that a hitch had occurred owing to the

intrusion on the scene of a Nepalese Customs Officer. He was a poor little creature to look at, not half the size of the sturdy villagers. Dressed in a very dirty white linen jacket instead of a thick cloth fur-lined overcoat such as those worn by the villagers, he shivered frequently, and was obviously suffering from fever or a bad cold. He was described as a Brahmin from the lowlands of Nepal. He appeared anxious to assert his authority in two matters, first by hindering us from being supplied with provisions by the villagers, and next by confiscating our arms. As the villagers were in no way hostile, and, even having regard to the advantages of trade, very friendly in their neutrality, and as the Customs Officer had no force whatever behind his exceedingly slender personality, we treated him with somewhat severe courtesy. I took my seat solemnly before our tent, supported by our two interpreters and two Gurkhas, while the local official squatted on the grass before us. I then made Rinsing, checked by Mr. Dover, explain our position, that we had been overtaken by the great snowstorm and were now seeking our way back to the British frontier. As to arms, we admitted that he might be within his duty in raising the question, but pointed out that he must know well that in this borderland arms were necessary both as a protection and also for procuring food, and that we could not give up those we had. As to provisions I declared that we could not understand or admit any interference on his part with our coolies in procuring food, and added that if I heard of further difficulties being raised I might be compelled to report the matter at Katmandu. For this purpose I requested his name with those of his local superiors and of his Chief at the capital.

This retort in kind to the threats he had been using of reporting our arrival at the next post down the valley, was extremely successful. The official's manner changed

and his opposition apparently collapsed. We gave him on parting some medicine for his chill in the shape of whisky, which he swallowed without any appearance of religious scruple. In the evening provisions again began to come in, though somewhat scantily. If any message was sent down the valley to the post at Taplajong or to Tambur it led to no results, so far as we were concerned, nor did it ever reach headquarters at Katmandu.

Thus began and ended our relations with the officials of Nepal. No doubt, had we remained many days at Khunza or attempted to penetrate further, by any but the most remote byways, into their country, we should have been stopped and escorted back. We owed our avoidance of any trouble to our entrance by an unguarded back-door, and the relative rapidity of our march. It would have been both pleasant and geographically profitable could we have remained a week at Khunza and attempted to climb Nango, an ideal view-point. At times since, I have been disposed to regret that we did not so determine. But when I put myself back in the position we occupied, short of provisions and only able to get very scanty fresh supplies in the village, desirous and under obligations to avoid, as far as possible, any 'political' incident, with a ragged following of more or less footsore coolies terrified at finding themselves in a strange land, I cannot but believe that on the whole we acted prudently in continuing our journey.

The week in the snow had been a severe trial to the coolies. We had done our best to distribute fairly and lighten their burdens, and to protect them from the consequences of their own carelessness in neglecting to use the snow-spectacles and boots with which they had been provided. We had systematically left Gurkha pioneers charged to collect stragglers and bring up the rearguard.

Some had been constantly missing from our camps and had gradually turned up on the march, having chosen their own bivouacs. At the Lake-bed Camp below the glacier I had been assured that the last lingerer had come in. I was now informed that one man was still missing, and the tale that follows was for the first time told me.

One of the Sikhim coolies, a native of a village in the Teesta Valley, of which Rinsing was the Kazi or headman, who was in one of the last detachments, had, on the day after that on which we crossed the pass, while traversing the rugged rock-slope, told his companions that he was weary of his present existence, and begged them to leave him to die. To this, according to their own account, they had readily consented. The unfortunate man gave them instructions how to dispose of his property, the stock of a little farm. They then furnished him with water and a few biscuits, covered his face with a cloth, and continued their march. At first—we had had so many disappearances and returns—I was incredulous of the tale. And until we regained Darjiling I entertained strong hopes that the missing man would appear among the list of deserters. But he never did, and Rinsing finally brought forward a claim for damages for the loss of his retainer, or tenant. The man's companions seemed quite unable to enter into my indignation at their desertion of their comrade. 'He wished to die; why should we disregard his wishes?' Their conduct, judged by our standard, was very strange, but I suppose it was characteristically Buddhistic. To me it was a very deep source of regret when my belief that, despite themselves, we had brought over all our party without loss, was thus proved to be mistaken. But nothing we could have done from the time I first heard any rumour of the sad business could have saved the poor coolie from the result of his resolve to lay down his life.

CHAPTER X

THE KANG LA

THE morning air, under the broad shadows thrown by the great cliffs across the valley, was keen and frosty. The basin in which Khunza lies looked even more attractive than on the previous afternoon, when mists had veiled the forested slopes and icy crests that now shone in the clear sunshine. The only blemish in the landscape was a burnt wood on one of the neighbouring hillsides.

Our coolies had quartered themselves and found hospitable entertainment in the scattered homesteads, and were naturally loth to resume the march. Much time was consequently lost in hunting them up; but at last the muster was complete, the last potatoes were paid for, and our procession formed. We turned uphill by a woodland path which climbed into the entrance of the Yamatari glen. This opens at a higher level than that of the main valley. After crossing its water by a good bridge we found ourselves in a most idyllic spot, a broad meadow where long-haired, low-backed yaks were peacefully grazing on the rank herbage. The icy crest and shoulders of Nango, with many glaciers hanging on shelves and filling the hollows of its sides, rose opposite and helped to frame a charming landscape. There were sundry tracks, and Rinsing's memory once more failed him; at least, he exhibited some uncertainty as to which track we should follow. We were less than half an hour from the village,

so I sent a man back to secure a local guide. There was every excuse for Rinsing, since at this point, as I gather both from his own narrative and that of Chandra Das, two paths diverge, either of which leads finally to the Yalung Valley. The one mounts the Yamatari Valley and crosses a high gap in the ridge, the lower circles round several spurs; they appear to join at the pass called by Hooker the Chunjerma. A cheerful youth presently came up, and became our leader. For some distance we followed the stream. Then we were called on to leave the path that kept to its bank and turn up some very steep zigzags, constructed with the contempt for reasonable gradients that marks the native tracks of the Eastern Himalaya. Dense rhododendron thickets, through which no air penetrated and no outlook was possible, replaced the more open wood, and the ascent proved hot, long, and wearisome. At last we gained a bare brow, a rib of rock and turf, forming the angle of the mountain between the Yamatari glen and the valley of the Kangchen. Prayer-flags marked this as a 'La.' This term is applied not only to a pass but to any distinct stage in the day's journey, any place inviting burdened men to repose and meditation. The top of any steep ascent may therefore be called a La. The coolies were not remiss in seizing the occasion. The midday mists were drifting up the main valley from the lowlands in denser columns than usual, and our photographers had no time to lose in order to snatch views of the icy peaks, outlying spurs of Jannu, at the head of the Yamatari. Its glacier was well in sight with a torrent flowing along its north, or true right flank, possibly the overflow of the tarn marked on Rinsing's sketch-map in this direction.

We breasted the hill until a second and loftier spur was gained, and then, turning our backs on the Kangbachen Valley, and facing south-east, pursued a long terrace track

leading across a bare hillside. Behind and beneath us the dark forest depths of the sinuous valley of the Kangchen were chequered by grey mists. In front was a sloping basin or recess filled by rough pasture and girt in by low craggy ridges. We were between two layers of clouds. Soon there was nothing visible more than 3000 feet above us, and the mists had blotted out all below. The Himalaya were thus reduced to the scale of Scottish landscape, and I could easily have imagined myself in some Highland strath. We could see that the ridge we had to cross was a long way off, but we could see very little else. In my case the result was that, more than on any other day of our journey, I suffered from the symptom generally attributed to rarity of the air, a sense of the burden of the body, and a consequent absence of any proper enthusiasm for walking uphill. We were only between 12,000 and 13,000 feet, yet I felt a weariness in the thighs, which was vividly recalled to me one day in London when I was ill-advised enough to run up the staircase at the Notting Hill Gate station of the electric railway.

For several miles—at least, in the fog it seemed to me a long way—we kept under the southern side of the ridge that bounds the Yamatari glen. Then the track, a very distinct one, crossed a stream, passed between some big boulders where we noticed signs of a camping-ground, and bore away across the head of a wide basin towards a recess closed by some rocky peaks. Presently it turned to the right up the slopes on the southern side of this recess. The ascent to the crest above us, though very easy, was still considerable, and having started late we found it time to pitch our tents when at a point still some 1000 feet below the pass.

As evening closed, the mists, after their usual fashion, melted, and the majestic head of Jannu rose sunset-flushed

over the nearer hills. At night we had camped among patches of snow; before dawn a white carpet was spread about us. This slight fall had cleared the atmosphere, and the morning broke bright and cold. The crests of Jannu and its two attendant peaks, just visible over the dark ridge in the foreground, gave a splendid promise and foretaste of the view that awaited us. At every upward step they rose more boldly and defiantly above the intervening crags. I urged the photographers to hurry on with their cameras, for I felt confident that we were about to be introduced to the highest mountain in the world.

Half an hour's uphill run—the slackness of the day before was forgotten, and the few inches of new snow on the path were no impediment—brought me, in advance of my companions and the coolies, to the loose stone-men and the waving prayer-flags that crowned the ridge.

The outlook from my 'coign of vantage' was prodigious both in its extent and splendour and in the marvellous variety of light and of shadow, of atmosphere and of colour. Like Tennyson's eagle, I stood

‘Close to the sun in lonely lands
Ringed by the azure world.’

If I could not, as in the most famous panorama ever imagined, see all the kingdoms of the world and the glory of them, yet all its zones and all its seasons, arctic frost and equatorial glow, winter and autumn, spring and summer, seemed to have met together within the range of mortal vision. I was perched at an altitude of about 15,300 feet, on one of the south-western spurs of the Kangchenjunga Group, the snows of which I, as it were, touched. On one side rose its majestic walls and towers of rock and ice; on the other I overlooked all Eastern Nepal, the valleys of the Tambur and Arun and their tributaries, and the southern borderland of Tibet. Beneath the deep blue vault of

heaven, the giant mountains of Nepal, stretched in a wide curve, extending all along the line of the northern horizon from a point nearly due west to the base of Jannu. Some, the more distant, were tinged as with pale gold, others shone in silvery light. Wherever the nearer range dropped, fresh peaks and horns shot up over its unknown and untrodden passes. Below the bright belt of new-fallen snow on which I stood the great spurs of the mountains were spread out, range beyond range, clothed in the brown and amber of autumnal woods and pastures, or the duller hues of pines and junipers. Lower still lay the tropical forests of the foothills, a fair broad carpet of perpetual green, broken here and there in the blue depths of the valleys by the flash of running waters, while far, far away to the south, a vague sea of pale sunlight and diaphanous, rainbow-tinted haze indicated the position of the Plains of Bengal.

In the foregoing sentences I have made but a poor attempt to transmit to lovers of great mountains some faint image of the general impression made on me by this noble view. The bright red and white rags that floated about me, the votive offerings of native travellers, witness, if we may believe Chandra Das, to their emotion in face of this superb exhibition of the glories of nature. *Lha Sol-lo: Lha Khyal-lo.* God be praised ! is said to be the purport of these inscriptions. The only European who had stood on the Chunjerma before me, Sir Joseph Hooker, has described the scenery, and the effects of atmosphere he witnessed on the road, in what is perhaps the most eloquent passage in his admirable volumes. This record will not be without use if it sends back my readers to the work of my illustrious guide and forerunner.

I have been fortunate above most men, not only in seeing many such Pisgah views in the Alps, the Caucasus, and the Pyrenees ; in Italy, in Corsica, and North Africa,

but also in being able to take pleasure in them. For we are frequently reminded that there are many people of fine taste, and even some climbers, who, brought face to face with a panorama, find nothing that gives satisfaction to their æsthetic sense. Whether this may be due to a fault inherent in the nature of panoramas, or to some shortcoming in the spectators to whose emotions they make no appeal, I have argued elsewhere,¹ and I need not repeat the argument here. For the view from our 'point of observance' was not a complete panorama like the views from the highest summits. It possessed something to impress minds that only the more gigantic and startling effects of scenery can rouse to any admiration. It had Jannu. Signor Sella's photograph on the opposite page will, better than any verbal description, bring before my readers' eyes the form of this magnificent mountain and the details of its structure. They will note the massive head, like that of a sphinx, planted on broad rock-shoulders, from which the folds of névé hang heavily, letting drop glaciers to fringe with ice-falls the lower precipices. Close under Jannu on its left two nameless peaks (21,820 and 21,880 feet) raise their sharp pinnacles above the Kangbachen Valley. To the right of Jannu a glimpse is caught of the western gable of the long roof of Kangchenjunga, and of the snowy summits (about 20,000 feet) of the ridge separating the Yalung and Yamatari Valleys, on an outer spur of which the spectator is standing.

'The most magnificent spectacle I ever beheld,' Sir Joseph Hooker calls this view of Jannu; but he adds in a footnote that Jannu is a 'very much grander but much less picturesque object than Mont Cervin.' In the fifties we all called the Matterhorn, Mont Cervin. This I venture to think is not quite fair to the Himalayan peak. Sir Joseph

¹ *The Exploration of the Caucasus*, vol. ii. pp. 171-3.

must have had in his mind the Riffel or 'rearing-horse' view of the Matterhorn. It might not be difficult to get a similar end-on view of Jannu from the opposite slopes between Khunza and Kangbachen. The Chunjerma aspect of the mountain ought rather to be compared to that of the Matterhorn from above Breil, whence the Shoulder is well seen, and the summit appears as a crowning tower on a broad wall. But I am quite willing to admit that there are more 'picturesque,' in the sense of more fantastic, peaks than Jannu both in the Alps and the Caucasus. Where the Himalayan giant surpasses its rivals (except perhaps Ushba), the great rock-peaks of nearer ranges, is in its majestic bulk and uniform precipitousness. Its 25,000 feet tell. It rises 13,000 vertical feet above the valley at its base, the height, that is, of the Schreckhorn above the sea; even if the actual height of its cliffs above the glaciers be not more than 6000 to 7000 feet, this is a third more than that of the Matterhorn above the Hörnli.

Next to Jannu the characteristic feature of the Chunjerma view is the meeting of the mountains and the plain. The contrast between the low country, the land of flowing curves and fair colours, of forests and flowers, where the 'earth has a garment of glories,' on the one side, and on the other the ice mountains which rise opposite and close at hand, rigid lines and white spires sharply defined and glittering against the dark heaven, was what has left the most lasting impression in our memories. It was only after a time that our eyes began to take in detail, and the topographical instinct to assert itself. The ring of distant snows which encircled more than half the horizon claimed closer attention. Nothing in Nature gains more from association than a distant panorama of mountains. In the Alps the mountaineer not only recognises the individual peaks; he revels in the recollections they suggest.

JANNU FROM CHUNJERMA.



He feels himself happily surrounded by the familiar faces of old friends. Even in the Caucasus on my second and third visits I felt how much interest was added to the scenery from meeting again the acquaintances of my youth. To recognise the domes of Elbruz soaring above the pikes of Ushba, was like meeting an old College friend. In a region that a traveller visits for the first time, he is apt to be bewildered by the crowd of peaks and domes and ridges ; he is unable at first to identify, or to fix in his mind, more than a few of the most prominent. In a country that Europeans have never explored, he is still more at a loss, for he has no knowledge of local names to help him. This was our position with regard to most, but not all, of the Nepalese heights within our range of vision.

There was one notable exception. The snows nearest to the plains, and farthest off in the west, were steeped in the golden haze that is an indication of distance, or of a richer, moister atmosphere. But, although seen through seventy miles of aërial space, their outlines and detail were absolutely clear and easily recognisable. We were gazing on the highest mountain in the world ; the highest mountain, at least (29,002 feet) that has been as yet measured by the Indian surveyors. By them it was, in 1856—no native name being in their opinion known at the time—called after one of the many meritorious officers who have been heads of the Indian Survey—‘ Mount Everest.’

A protest was immediately raised by the well-known Himalayan traveller, Sir J. Hooker’s friend, Mr. Brian Hodgson, the Resident at Katmandu, who declared that the peak was known in Central Nepal by native names. The then Surveyor-General appointed a committee of four officers to report on the subject. They contradicted Mr. Hodgson, and justified the decision of their office. The main arguments adduced on behalf of the

Survey have been, that there is a strong probability, amounting almost to a certainty, that the 29,002 feet peak is not one of those visible from the neighbourhood of Katmandu; and that even if it is, the name Gaurisankar is used vaguely for the snowy range seen to the east and not applied specially to this particular peak. As to the first point, all depends on, what we do not yet know, the exact height of the intervening ridges, for as far as distance is concerned (110 miles), there would be no difficulty in recognising the peak from heights of 7000 feet near Katmandu. A recent German traveller, Dr. Boeck, declares that he has seen it thence, and has published a photograph showing a summit which undoubtedly corresponds fairly in profile with what we might expect the reverse of the 29,002 feet peak, seen from the Chunjerma La, to look like. I am not, however, prepared to treat this recognition as satisfactorily established.

As to the second point, to meet it fully would require a dissertation on the principles of mountain nomenclature in different parts of the world. I will only point out here that the name Monte Rosa was applied for centuries to a snowy group before it was confined to a single knot of summits, and that it has been a common practice, as knowledge has grown, to confine a name previously used more indefinitely to a particular peak. But I am ready to admit that we have as yet no absolutely conclusive evidence that the Nepalese call either the group or the peak itself Gaurisankar.

The case, however, does not end here. The group stands on the frontier of Nepal and Tibet, and we have the evidence of a survey officer, the Pundit Chandra Das, that the 29,002 feet peak has a Tibetan name separate from that of its group. As long ago as 1885 he wrote in his official report of 'the grandest and highest of the

world's mountains, Chomokankar (the Lord of the Snows), which overhangs Lap Chikang, the famous mountain of great Buddhist sanctity. Major Waddell has, moreover, in his recent volume produced further evidence that Chomokankar is the name given to the loftiest summit of the Lapchikang Group in East Nepal.

Having regard to these facts, I regret that I cannot agree in the propriety of imposing an English name on the highest mountain in the world. It would, it seems to me, be a bad precedent to do so. Where possible, local names should bear the stamp of the locality. In Arctic waters or North American wildernesses, where no man has ever come before him, the explorer may legitimately commemorate his sovereign, his patrons, his friends, or even himself. For myself, I dislike the practice ; I would much rather the names of the Presidents of the Alpine Club had not been attached to certain peaks of the Far West. This, however, may be regarded as a personal prejudice. But in the Himalaya the great mountains have native names, and I cannot think it either right or expedient that we should disregard them.¹

To return from this digression. Three separate summits of the Nepalese Group were displayed before our gaze. They were seen over a double foreground, first the brown pastures and snow-pencilled rocks of the ridge above the Arun Valley, which reach, perhaps, to 15,000 feet, next a range capped by a single and double rock-peak, both rising out of glaciers. Through the saddle that opened between them appeared the noble pyramid of Makalu, 27,799 feet (the 'peak 13' of the Survey), less domelike than when seen

¹ A local name, Chogori, was got for K² in the Karakoram by the party that bivouacked at its base in 1902. See the *Jahrbuch of the Swiss Alpine Club* for 1893.

Those who care to know all that has been written on this question may consult Major Waddell, and articles in the *Proceedings of the Royal Geographical Society*, vol. viii., New Series, and *Alpine Journal*, vol. xii., by the late General Walker and the present writer.

from Sandakphu, but (as can be proved by photographs) easily identifiable by the crescent-shaped hollow in its face. Over its snowy northern shoulder rose the Monarch of Mountains. I must confess his first appearance was disappointing. Owing to its greater distance, its gentle northern slope, and the relatively small portion of its precipitous southern slope in view, Chomokankar looked what a mountaineer might call an easy mountain. I think every one who studies the picture opposite will agree that the outline of its two tops bears an extraordinary resemblance to that of the Dôme and Aiguille du Goûter, from the Col de Balme, with Mont Blanc left out. The third of the golden peaks was of a very different character. It appeared over the northern slope of the lower peak of Chomokankar, in the shape of a gigantic rock-tooth. We had no means of measuring its height, nor could I at first get any help to its identification from maps. On further research, I think, however, it is possible that it may be the T.42 of the Report of the Pundit M. H. issued separately in 1887. This peak and another near it, T.45, situated respectively 21 and 18 miles W.N.W. of Chomokankar, were observed by the late Colonel Tanner, who fixed their heights from the plains.¹ These peaks rise a few miles to the west of the chief pass of the district, the Pangu La,

¹ The subjoined details have been kindly supplied me by the Surveyor-General.

Name of Peak.	Latitude	Longitude.	Height in feet above Sea-level	Number of rays determining		Discrepancy per mile in common side of triangles	Fixed from
				Position.	Height.		
T.42	28° 6' 35" S	86° 39' 45" E	25,430	3	1	Feet. 1'4	Tirhoot Dis- trict (Bengal).
T.45	28° 5' 30" S	86° 42' 16" E	26,740	3	2	1'6	Purnea Dis- trict (Bengal).



THE LAPCHIKANG GROUP FROM CHUNJERMA

1 CHOMOKANKAR, 2 MAKALU, 3 UNIDENTIFIED PEAK.

at the point where a bold spur from the outer Himalaya stretches north towards Tibet.¹

North of the Chomokankar or Lapchikang Group no very lofty snows claimed our notice before the panorama was interrupted by a black rock, a view-point a few hundred feet above us, which, had there been any chance of reaching it in advance of the clouds that were already sailing up the lower valleys on their daily visit to the snows, we might have been tempted to climb.

In the gap framed between this crag and Nango we noticed a lofty snow mountain on the horizon. Nango (20,226 feet) and its nameless sister (21,027 feet), the most westerly summits visible from Darjiling itself, were only separated from us by the narrow cleft of Kangbachen. They are massive peaks, defended by terraces of cliffs and glaciers, but certainly accessible. As I have already hinted, it was a matter of regret to us all at the time, and still more afterwards, that the preliminary difficulties that stood in the way of our climbing one of them were so serious as to prevent us from making at least an attempt. We might possibly, though I doubt whether in the circumstances it would have been altogether justifiable, have disregarded the risk of a political complication from a prolonged stay in Nepal. But our consciences were not tested, for the question of provisions for our coolies was urgent, we had only just enough with what we procured at Khunza to carry them to the first villages in Sikkim.

Between Nango and the spurs of Jannu, looking up, that is, the gap of the Kangbachen Valley, the sharp black cone above the Kangbachen fork was a landmark in the foreground, while behind it stretched a continuous and lofty snow range with many summits, over one of which we had a tantalising glimpse of a long ridge running up to a

¹ For a further discussion with illustrations on these matters, see Appendix D.

high pyramidal snow peak, perhaps the most formidable rival of Chomokankar in our field of vision.

All these summits are situated in the tract of country between the Kangchen and the Upper Arun. We were hardly, I think, high enough to see to the range beyond, where, in latitude $28^{\circ} 50'$, longitude 87° E., native surveyors have reported very high peaks to exist. Had we been able, as we had hoped, to climb the Kangla Peak (18,300 feet), in clear weather we should have been in a better position for testing the Pundit's and Mr. W. W. Graham's reported observation of such summits. There is no doubt that there is a persistent native belief in the existence of rivals of Chomokankar in this quarter. Nor can we doubt, from what we saw, that north of the Outer Himalaya to which both Kangchenjunga and Chomokankar belong there are ranges of great altitude. On the other hand, a native's belief as to the relative heights of peaks he has had no opportunity of measuring is far from conclusive. The comparison made may even have been between the height and difficulty of passes on the road rather than between summits visible from it. It may quite plausibly be argued that Mr. Graham mistook Makalu for the highest mountain, and that his two summits, 'one rock and one snow,' were the nameless rock peak and Chomokankar. There is a good deal to be said for this view. The Kang La Peak is only a week's travel from Darjiling. Will not the Surveyor-General send up an officer who can climb and is competent to settle the point at issue?

The time came when we must start, if our coolies were to reach the Yalung Valley before dusk, for they could not be trusted to march without us. So we set off, leaving Garwood to finish his plane-table work. His figure, bent birdlike over his task, remains, cut out on the skyline in front of Chomokankar, in some of the stereoscopic parting-



MOUNTAINS BEYOND KANGBACHEN FROM CHUNJIRMA

shots taken at the Nepal mountains before the mists of the lowlands put forth their long arms and shrouded them from our view.

The ridge we had just left was but a spur, a finger of the hand stretched out from Jannu; we had others to cross before we found a descent into the upper Yalung Valley. Our track ran diagonally across the steep slopes at the head of a rocky glen, descending at first soon to rise again.

Among the crags close at hand rose a strange obelisk which we recognised as the isolated pillar mentioned by Sir Joseph Hooker, and 'the self-grown image of the horrid deity, Tamoidin or Haya-Griba' of Sarat Chandra Das.¹ The next ridge divides, I believe, the waters flowing to the Yalung from those of the tributaries of the Kangchen torrent. Here the mists settled on us, so that we saw nothing beyond the commencement of the track taken by Sir J. Hooker, which leads directly down to the lower Yalung Valley. We turned to the left, along a well-marked and easy path. After a short ascent it became an almost level terrace. The fog hid all but our immediate surroundings, and the visible scenery reminded me of the 'traverse' on the Col du Bonhomme in the tour of Mont Blanc.

¹ As I read Sarat Chandra Das in his second report (1881), he calls the top of the steep ascent from the Yamatari Valley, where we found prayer-flags, 'white and red strips of cloth tied as offerings to the fearful Mamo,' Tama La. Mudanphug and Mendaphug are halting-places on the broad hillside between Tama La and Senon La, the saddle whence we enjoyed the view. 'The dip on Pangbo' lies between the Senon La and the Mirkan La. 'The lake near Kandophug' is that passed by Sir Joseph Hooker in his descent into the lower Yalung Valley. The terrace beyond the Mirkan La is the Babu's Chunjerma. The Nango Laptse is the spur fronting the upper Yalung Valley where the steep descent begins. The tarns of Tso Chung Donka lie on a shelf midway in the descent.

In his earlier report relating to his journey to Shigatze in 1879, Chandra Das, however, makes the Pangbo La a pass and not a hollow, and the Mirkan La and Pang La are represented as the steepest ridges.

Rinsing in his ms. map, made after his 1884 journey, gives the name of Lhasong La to a direct pass from the Yalung to the upper Yamatari Valley.

On our route he indicates the Sinon La, Mirgin La (*sic*), and Mangho Lapche (*sic*) Passes.

Shrouded as we were in gloom, it seemed long before we reached yet another La, not a true pass but a beflagged knoll, marking the edge of the steep descent to the upper Yalung Valley. The view hence of the back of Kabru and the Yalung Glacier ought to be magnificent, but we waited in vain for the usual afternoon lifting of the vapours. The curtain remained obstinately motionless. Only for one moment was it raised, or rather rent, and the sanctuary revealed. The coolie who carried the camera was loitering, and the precious moment was lost. What I saw was a steep ridge rising to the western peak of Kabru, and forming the edge of a tremendous snow-cliff, like (to compare small things with great) the northern face of Piz Palu in the Engadine. There was no doubt about the identification of the peak, but I failed to recognise the snow-plain which the late Colonel Tanner believed to exist between the summits. From Darjiling the top shows as more or less of a level ridge, but length of course does not necessarily imply breadth in ridges. A telescopic view given in Major Waddell's *Himalayan Travels*, taken from far away in the plains to the W.S.W., lends, however, some support to the Colonel's statement.

When we got below the mists we saw underneath us a deep, well-wooded glen, with meadows and a few stone huts beside the stream, and higher up great earthmounds, the frontal moraines of one of the most important of the glaciers of Kangchenjunga. Mr. W. W. Graham is the only Englishman who has visited its lower portion. Both he and Rinsing claim to have climbed one of the outlying peaks, possibly the same peak, on the south-western spur of Jannu, which they agree in estimating at from 19,000 to 20,000 feet. Of the cirque at the head of the glacier we obtained a view over the nearer range from the lower end of the Mon Lepcha spur.

There is no reason, apart from the political difficulty, which, owing to its proximity to the frontier, might easily be evaded, why this glacier should not be explored. In its recesses, according to Nepalese belief, lies Na Pemathang, an earthly paradise where dwell seven Lepcha couples, neither begetting offspring nor suffering death, but living in plenty on crops of rice, Indian corn, and *marwa*. It would appear that these fourteen persons are the only Lepchas who have attained to a blissful immortality. I imagine that a later tradition has localised here the primitive Heaven of the race. Sarat Chandra Das goes on to tell us that Jigma Pao, the last but one of the Head Lamas of an adjacent monastery (Dechen Rolpa), by virtue of his saintly character penetrated this mystic abode and thereby earned the title of Pao, or 'the dauntless hero,' from his co-religionists. Then, with a curious lapse into rationalism, the Babu adds : 'Last year a native of Yalung penetrated into Na Pemathang, situated between the Cho Kangchang (Kangchen-junga) and Juona (Jannu). He was enveloped in mists, and although he saw forests and pastures he failed to see any trace of human abode or cattle, and encountered immense difficulties from snowfalls.'

We ran down grass slopes or steep, stony zigzags till we came to a shelf embellished by two small tarns, fringed with brushwood. Travellers must not make tea here, for the mountain nymphs who dwell in the water resent its being boiled. Chandra Das is to hand again with a story of how three Nepalese traders committed this rash act, and, terrified by thunder from a clear heaven, had to abandon their goods and fly. The solitudes of the Himalaya are in native belief thickly peopled with spirits of the mountain and the crag, the stream and the lake. It was hardly to be wondered at that our followers objected to going out after dusk, and even by day were reluctant to venture alone

among invisible neighbours, who bear the character of being more or less freakish, when not positively malignant.

The path from the lakes to the valley was a staircase down a steep declivity among little cliffs draped in under-wood such as are frequent in the Italian Alps. Nor was there anything in the group of stone huts at its base to remind us how far we had strayed from those familiar haunts. A peasant and his wife, who had caught us up on the passes, halted here. They had come to remove their stores before the winter. Our men profited by the occasion to add to their scanty provisions by the purchase of some grain, which was convertible into a not unpalatable porridge.

Our intention and wish had been to remain here for at least the night. But Rinsing, still eager to get out of the reach of Nepalese frontier guards,¹ urged various reasons for our going on to what he described as a far better camping-ground situated an hour's walk distant, in the entrance to the side valley that leads up to the passes to Sikkim, the Semu La and Kang La. Influenced by the state of the weather, of our stores, and the sickness of many of our coolies, I yielded to him. We were the more ready to do so, as we could reasonably anticipate that following in Mr. Graham's footsteps, we might be able to climb one of the comparatively low and easy summits north of the Kang La and thence obtain a complete panorama of the Yalung Glacier and its environment. The weather hindered us, and it remains with me a matter of regret that we thus passed by one of the great glaciers of Kangchenjunga and left its head unexplored. Its terminal moraine appeared to

¹ See Major Waddell's *Among the Himalayas*, p. 395, as to the habitual nervousness in this respect of the natives of Sikkim. 'The natives of these parts dread the pains and penalties that the Nepalese rulers inflict on all who impart information or assist Europeans in gaining information concerning the country or the people.'

be about a mile distant from the huts. Mr. Graham writes :—

‘ We turned to the right (from the Kang La) to the foot of the glacier which flows in a beautiful stream south-west from Kangchenjunga. Here we encamped on the moraine in one of the grandest amphitheatres imaginable. Due east rose Kabru, 24,015 feet, its western face almost like a wall, corniced with huge masses of glacier and snow, from which thundered an incessant volley of avalanche. North-east rose Kangchenjunga—its grey precipices even now but lightly touched with snow. North Jannu showed its awful southern cliff, whilst west rose a great peak of rock and snow, great actually, though small and easy as compared with its neighbours. Early next morning Emil Boss and I started to ascend the peak on our west. It was a hard and interesting scramble of five and a half hours’ rock and snow alternately. Only one place offered any serious difficulty, and at 10.15 we were on the summit.

‘ Though the western view was clouded, we had a noble view of the¹ north-west of Kangchenjunga. Both by aneroid and comparison with other surrounding peaks we estimated our height as rather over 20,000 feet.’

It is to Rinsing that we owe the first authentic mapping of the valleys and ridges in this region. The two-miles-to-the-inch sketch furnished to the Survey Depart-

¹ ‘Country’ must be read in here to make the text intelligible. Major Waddell has, I think, misunderstood this passage. I see no reason to doubt Mr. W. W. Graham’s ascents in Sikkim. He is not a careful writer, and is apt to make hasty statements. But I believe in the substantial accuracy of his narrative as to where he went. Much of the criticism bestowed on it has arisen from crass ignorance of mountaineering, while the argument of those who have maintained it to be incredible that three fast and first-rate climbers should have been able to reach 24,000 feet without severe suffering is seriously impaired by the fact that Dr. Workman, with Italian guides, has this year reached a peak of 23,300 feet, climbing to it over a lower summit.—See *Alpine Journal*, vol. xii., and *R. G. S. Journal*, November 1903.

ment by Mr. W. Robert in 1881-83, a copy of which has been kindly given me by the Surveyor-General, is misleading as regards the country immediately beyond the British frontier. For instance, he joins the torrent of the Yalung Glacier to the stream in the Tawa glen, and brings it within about a mile of the top of the Kang La; and in order to effect this, the long Namga Tshal glen and its glaciers are obliterated. The eight-miles-to-the-inch trans-frontier map (sheet No. 7) is the first official sheet, as far as I know, that shows anything like the true relations of the ridges and glens between the Yalung Valley and the Kang La Ridge.

An account of Rinsing's explorations in this district is given in the *Survey Reports* for 1884-85 (see Appendix C), and a copy of the ms. map he sent in to the Department is before me. From these it appears that he actually climbed two summits, one of the snowy eminences north of the Kang La and a crest on the south-western spur of Jannu behind Tseram, the height of which he estimates at 19,000 feet. It is unfortunate that this energetic climber and intelligent man should never have received any adequate instruction in the cartographic methods of representing glaciers common to all western nations. Otherwise we might have had long ago a generally accurate delineation of the Yalung Glacier. As it is, I am reduced to interpret the probable import of his strange indications by analogy from his treatment of the other glaciers we explored in detail. The glacier doubtless extends over all the queer little rivers and wormlike forms that, in his map, fill the Yalung Valley between Kangchenjunga, and the word 'moraine' inserted just above Tseram. This would give the ice a length of eleven miles, which, compared with the seventeen miles of the Zemu Glacier and the fifteen miles of the Kangchen Glacier, is about what we might

be led to expect looking at the more limited area of the névés that feed it.¹

After a brief halt on the meadow in front of the huts of Tseram, we crossed the river by what is called in India a 'pukha,' that is, a permanent bridge. In Nepal, as Chandra Das observes in the account of his first journey, the bridges are not of the flimsy and fragile construction common in Sikkim. Those we saw were built like Alpine bridges, the cantilever principle being called in whenever requisite.

A woodland path led us upwards through a forest where the tints of autumnal foliage mingled with the dark green of the firs, until in a short hour from the Yalung we crossed a low spur and found ourselves on a brow overlooking a lovely glade at the entrance to the long side-valley up which lay our course to the Kang La. We could not deny that Rinsing's recommendation of the spot as a camping-ground was well deserved. Rocky banks, clothed in rhododendrons and small bushes, enclosed lawns of smooth turf; clear springs formed pools in the hollows; the surrounding woods made a pleasing background. Late at night, when the dull mists at last cleared off, we saw in the moonlight an icy peak, one of the south-western spurs of Jannu; at early dawn we had a beautiful vision, framed between the slopes of the Yalung Valley, of the distant ranges above the Arun. Seen through an atmosphere suffused with the first sunbeams, their forested ridges lost all local colour and glowed with the blues and purples of aërial distance. It was a picture which made me long for an artist to make some notes that might recall its loveliness.

The charm of this spot did not escape the native

¹ I incline to believe that Mr. Garwood has been led by trusting to the work of his predecessors to make the Namga Tshal glen fall into the Yalung Valley too low down, and that Tseram ought to be placed higher up the main valley than it is in his map.

travellers who preceded us. Local tradition has it that it was visited by Lhatsun, the introducer of Buddhism into Sikkim in the seventeenth century, and the Saint is said to have given it the name of Namga Tshal or the Grove of Joy. According to the somewhat credulous Babu, 'Lhatsun, when first coming to visit these Himalayan regions, spent a few days here, struck with the fine scenery and the spaciousness of the valley. The fatigues of his long and perilous journey from the northern solitudes of Tibet had broken down his health, but the few days that he spent here greatly restored him, not only by the delightful scenery of the place, but more especially by the comforts that he obtained both religious and physical.' So much restored was the Lama that, according to tradition, he flew up through the air to the top of Kabru and spent a fortnight there. Would we might have been privileged to perform similar feats of 'volitation.'

Here also Chandra Das reposed after the remarkable exploits he performed on the Semo La. I have printed at full length in an appendix his narrative of his journeys across Nepal.¹ It seems to me full of interest, not only on account of its picturesque phraseology and local colour, but also for the light it throws on the aspect in which mountain scenery and the incidents of mountain travel present themselves to an educated Asiatic.

The beauty of this portal to the Kang La is not borne out by what follows. Like some of the passes round the southern flanks of Monte Rosa, lower spurs hide from the traveller the great peaks that are close at hand. The path runs up a somewhat monotonous glen which presently

¹ It has been printed in an abridged form in the volume of Sarat Chandra Das's Travels issued by the Royal Geographical Society. The abbreviations Mr. Rockhill found himself obliged for the sake of brevity to make in this part of it, rob it of half its charm for mountaineers, and I have therefore felt no scruple in giving the original text.

bends to the east, under the ridge of the Semo La.¹ The slope is uniformly gentle, the ground perfectly easy, until at the top of a short ascent the traveller finds himself in a mountain basin, the bottom of which is a dreary plain of small stones across which trickles the drainage from sundry snowfields and glaciers. A second stream issues from a gap in the hillside more to the right, and it is up this that the way to the Kang La lies. Following the water through a series of narrow gulleys we came to its source in a series of steep, snowy banks, on the top of which lay a small glacier. Dreary mists had now again enwrapped us, and from the low, rocky ridge (16,313 feet) that forms the watershed and the frontier of Nepal we saw nothing but the prayer-flags which mark it. The view, however, can never be very striking as the saddle is surrounded by loftier ridges. The whole pass is absolutely free from any difficulty. On the Sikhim side the first descent resembles that from the St. Theodul towards Breil. A short uncrevassed glacier is crossed to the moraines on its left bank.

Here, despite the very unpromising, not to say threatening, aspect of the weather, the Signori Sella resolved to camp in the hope of climbing higher and obtaining a panorama of the Yalung Valley. Garwood and I, less sanguine, determined to descend to a more sheltered spot. The air was raw and cold, and sleet fell from time to time. Our way seemed long and dreary; first we ran down a great scree of tumble-down moraines, then we wandered along a treeless, grassy trench where the surface of the earth was often broken by deep cracks so fringed and concealed by grasses as to be dangerous to a careless pedestrian.

¹ This ridge was the point gained by Major Waddell, and also (if I read her very confused and ambiguous narrative rightly) by the authoress of a large volume, *The Indian Alps and how we crossed them, by a Lady Pioneer* (Longmans, 1876). There are sundry passes over the ridges south of the Kang La Peak, which, when the Kang La itself is closed, are used as routes from Sikhim into the Yalung District of Nepal.

The slope of the valley was gradual and interrupted by a succession of brushwood-covered levels on one of which we pitched our tents. We had made a longer march than for many days past. But our coolies were like horses returning to their stables. They were near the end of their provisions; they trusted that they were also near the end of their labours, and they followed with alacrity water that flowed in the direction of their homes. We were less pleased to be driven down from the heights. Yet there was nothing to induce us to linger. The night was raw and damp, mists enveloped us, sleet or snow fell intermittently, and in the morning the ground was a diaper of white snow and wet slush. Two hours after daybreak the Sellas came in from their chilly and fruitless bivouac, and our reunited party set out for the march that was to bring us to Jongri, and possibly, though of this we had no assurance, into direct touch with the outer world.

We presently crossed the stream, and, advancing among scrub, chiefly rhododendrons, which reached larger dimensions as we lost height, found ourselves on the brink of a long and steep descent, down which the track plunged in steep zigzags, and the torrent in a succession of waterfalls. Far beneath we despaired through the damp vapours a finely wooded valley, that of the Rathong, which drains the south-western icefields of Kabru. The growth of the rhododendrons was superb, and the cascades would have been thought a good deal of in the Bernese Oberland. Pale transitory gleams of sunshine lit up the great green hillsides, where colonnades of dark firs climbed among abrupt cliffs, and masses of wet foliage glistened beneath them. The bottom was reached at last, and two bridges carried us over the torrent of our glen and that issuing from the larger valley leading up to Kabru. Then we attacked an ascent of some 2000 feet on the lower slopes of the great

spur or promontory that running out from Kabru separates the waters of the Rathong and the Praig Chu. The most picturesque bit of foreground—the weather hid from us all but foregrounds—was where we passed under a wall of cliffs. The top of the climb was as usual marked by flags. Beyond the La we found ourselves on a wide upland—a true Alpine pasture. After we had crossed a brook and a hollow, two stone huts suddenly loomed through the dismal drizzle, and—welcome vision!—a white pavilion of the comparatively lordly dimensions affected by officials on tour. We were at Jongri, and our friends at Darjiling had sent out a relief party to meet us.

In a few minutes we were sitting round the door of the hut, sipping cups of excellent coffee, and contemplating the stupendous 'mail' which promised occupation even for a whole wet day. There was no lack of news, public or private, from the lower world. The Boer war had broken out. Darjiling had been devastated by our Zemu storm, lives had been lost, villages swept away. We were ourselves reported to be buried under an avalanche. Yet in the midst of all the work thrust on him by the local catastrophe, Mr. Earle, the Deputy Commissioner, had found time to send us aid along the Singalila ridge by a track above the reach of floods, and consequently independent of their consequences, broken bridges.

Our night was disturbed by strange interruptions. The camp was assaulted from time to time by the tenants whom we had dispossessed of their accustomed quarters on the little plain below the huts. The yak is an extremely inquisitive and greedy animal. Time after time, undaunted by sorties, impervious to ice axes, the beasts returned to the attack, driving their heads sullenly against the backs of our tents, so that when at last I went to sleep it was to dream that I was about to be crushed by an avalanche in the form of a horde of white yaks.

CHAPTER XI

JONGRI AND THE GUICHA LA

THE spot at which we have now arrived calls for particular and detailed description, for it is, I believe, destined in future, though perhaps far off, years to become the mountaineers' headquarters, the Riffel Alp or Eggishorn of Sikkim. A broad pasturage just above the forest-level, commanding extensive views of the snows on one hand and the foothills on the other, within half a day's march—when the paths have been made good—of the Kabru and Pandim Glaciers, affording charming strolls or 'ladies' walks' in three directions, having at hand a convenient Riffelhorn in the 15,780 feet high Kabur, the black rock conspicuous even from Darjiling against the snows, it needs nothing but the extension and repair of bridle-roads from Sandakphu and Pamionchi to make it the inevitable excursion for the more adventurous tourist. I see no reason why it should not also serve as a health resort for Anglo-Indians in want of drier and rarer air than that of the City set on a Hill. Camping out is so well understood in India that a bungalow would not be an immediate necessity, but some permanent shelter would probably soon arise. The so-called 'huts,' in reality roomy hospices, of the Austrian Alps, several of which stand as high as 10,000 feet, an altitude relatively far higher than that of Jongri (13,200 feet), might serve as a model to the builders.

A glance at the map will best explain the situation

of Jongri with respect to the neighbouring valleys. It lies on, or rather it is, the broad top of the lower end of a great spur which, running out south from the north-eastern peak of Kabru, separates the glens of the Praig Chu and the Rathong. Its relation to the snowy range is in many respects similar to that of the well-known Wengern Alp. The valleys of the Rathong and Praig Chu correspond to those of Grindelwald and Lauterbrunnen.

The huts of Jongri stand a few hundred yards west of a grassy crest from which the undulating tableland breaks down to the deep, trackless gorge of the Praig Chu. The highest point of this crest is a mound I propose to call 'the Belvedere,' since it is admirably situated for a general survey of the neighbourhood and of the peaks round the Praig Chu. But in order to examine the south-western face of Kabru and the glaciers of the Rathong, it is necessary to walk west, in the opposite direction, and cross the pastures to the knoll above the gap at the base of Kabur I call 'the Shepherd's Pass.' To see Kangchenjunga to advantage one must climb to the crest of Kabur, or go down as far as Mon Lepcha.

Looking to the north from the Belvedere the foreground is composed of rolling hills, low ridges enclosing swampy basins, the beds of former glaciers, now cloaked in green and brown grasses, except where the rains have washed the slopes bare and white. Across the slopes that fall towards the Praig Chu winds a sinuous track that affords the only access from the lower valley to the sources of that stream. To reach the pastures of Alukthang at the foot of the glaciers, the traveller or pilgrim from the lowlands must, from the bridge near the confluence of the Rathong and Praig Chu, climb through 7000 feet of forest, traverse the high downs of Jongri, and then go down again some 1600 feet to the level of the upper

valley. Sitting on the Belvedere, the eye easily makes the plunge and strikes the water of the Praig Chu, falling in white cascades under the scarred buttresses, grim cliffs, and hanging glaciers of Jubonu (19,450 feet), the nearest of the great peaks. Over its southern shoulder rises a nameless rock-peak of almost equal height; and, more remote, the tip of Narsing asserts itself at sunset by catching the flush on its icy brow. At, or slightly above, the timber-line, where in the Alps a cluster of brown chalets would be looked for, several tarns brighten the hill-side south of Jubonu. Tarns have a religious attraction in Sikkim. The nymphs who inhabit them are reputed to be the consorts of the mountain demons. These particular lakelets are said to mark a place of banishment for Lamas whose irregular conduct has caused scandal in their community, and who have been consequently condemned to live for a time as hermits in the heart of Nature. It is to be trusted they give no cause for jealousy to the mountain demons.

Immediately opposite, closing a vista, rises Pandim (22,020 feet), its tilted cliffs cloaked in a thick icy hood; a splendid horn, cut off by the castellated crags and deep gap of the Guicha La from Kangchenjunga and Kabru. Those peaks are in part concealed by intervening spurs, and do not show to advantage. To the west over the gentle slopes of Jongri rises the long but tame outline of the Kang La ridge. Its glens may detain the scientific eye of a geologist, who discovers in them 'hanging valleys,' but the lover of the picturesque will not linger here. For him the panorama has only two sides, it leaves two impressions, the peak of Pandim, and the green expanse of the foothills towards Darjiling, seen as through a gateway, between the steep walls of the lower Rathong Valley.

My alternative resort was a spot, five minutes' stroll west of the huts, where some big boulders crowned the very edge of the precipitous gorge which falls away towards the Rathong. The view from this point was less panoramic but perhaps more picturesque than that from the Belvedere. The cliffs below were gloriously wooded; adventurous pines, climbing out of the dense mass of foliage, perched on the crags close at hand, the lower slopes glistened with masses of rhododendrons. The hills beyond the Rathong were rich in green pastures and lawns, divided by pleasant glens and concealing in their hollows numerous lakelets, ideal sites for the hotels and pensions of the future. In this direction lies the track to the Singalila Ridge by which our supplies had come up. It is at present by far the easiest approach to Jongri, and even practicable for ponies. But it is of course far more circuitous than the path by Pamionchi and Yoksun, which Mr. Graham, ascending, covered in six days, and we, descending, in four.

The level crest of Kabru, rising at either end to a top on which the field-glass revealed hanging masses of corniced snow, peers over the green gap of the Shepherd's Pass. In the opposite direction our eyes ranged far and wide. Looking over the gorge of the Rathong we gazed at the Darjiling view reversed. In the middle distance were the same long lines of green ridges. The scattered buildings of Darjiling itself, forty crows' miles off, and more than double that number by road, were clearly visible. A bright star flashed on one of the nearer forest ridges. It was an old acquaintance, the irrepressibly obtrusive new zinc roof which the Lamas of Pamionchi have had the unhappy idea to substitute for their former thatch. These were the only habitations visible. East of Darjiling and Senchal, through the gap in the outer foothills, we saw the plains of Bengal

and the sinuosities of the Teesta, a long silver ribbon melting at last into the layers of golden heat haze which concealed India. As noon approached shining clouds rose from the moist, shadowy depths of the river courses, and broke into fragments which drifted away northwards, passing over our heads to cross the gaps in the snowy range.

I have read somewhere that there are no sunsets or afterglows on the Himalayan heights. As far as Sikkim is concerned this assertion is the reverse of the truth. To watch a sunset from Jongri is a thing worth living for. More beautiful colours in earth and sky I have never seen. Beyond the broad shadows of the foreground the more distant foothills turned into solid waves of sapphire, the snows blushed rose-red, until the flush, slowly dying out on the lower heights, lingered last on the crests of Pandim and Kabru. Slowly the dusk deepened in the luminous sky until the moon rose, and, kissing the icy foreheads of the loftiest peaks, threw its mild radiance over the vast spaces spread out beneath us.

Our stores replenished and our caravan overhauled, we were ill content to turn our backs on the snows. A squad of invalids was despatched home, another detachment was left to recruit at Jongri. We selected a company of our most active men, mostly Bhutias, and set out for the Guicha La, two days', or rather two half days', march distant. After crossing the little pass or gap north of the Belvedere we wandered along a well-marked path, now mounting a rhododendron bank, now traversing on stepping-stones a swampy hollow. On our right the Praig Chu flowed deep below in its pathless defile, on our left the rock-tooth of Kabur (15,878 feet) dominated the grassy shoulders which for the most part hid the far higher snows of Kabru. Opposite, the long screen of Jubonu reminded

me of the snowy range that faces Murren. It looks accessible but difficult, and this is what Mr. Graham found it; the route he describes can be more or less traced on Signor Sella's photograph from Kabur. Pandim, to the very base of which our morning's walk was to lead us, displayed its cupola of ice borne up on granite precipices. Protected on this side by the steepest of cliffs and ice-slopes, it exhibits to the mountaineer no weak spot in its formidable defences.

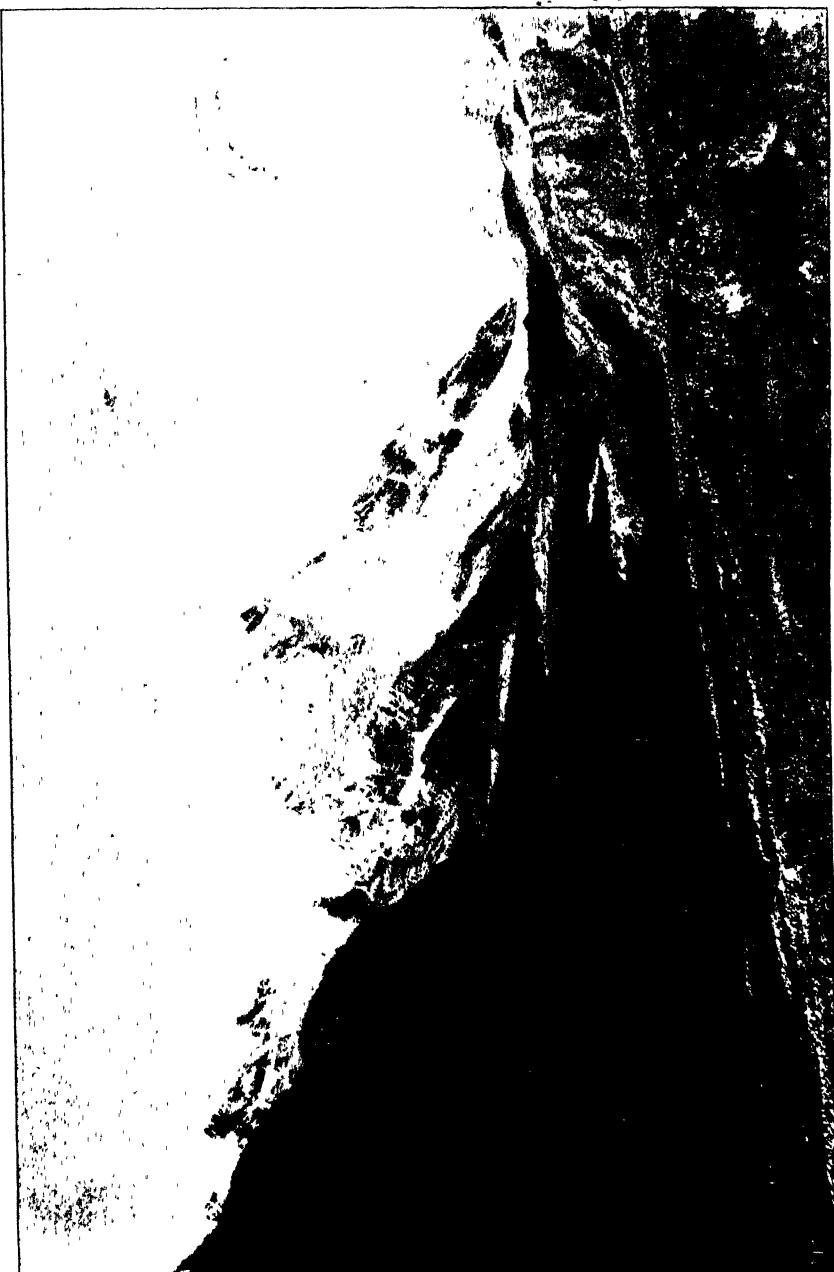
A brow, decorated as usual with stumpy stone-men and prayer-flags, marked the top of the steep flight of zigzags which was to lead us down to the river. At the bottom a rude bridge spanned a tributary stream flowing from a glen under the southernmost summit of the south-eastern spur of Kabru, a peak I call, provisionally, the Forked Peak. A few minutes' ramble through a pleasant grove brought us to the bank of the Praig Chu, a tumbling torrent. Here wood and water formed a perfect frame for Pandim. It is a spot that should be as inviting to Himalayan artists as the meadow below Rosenlauui has proved to Swiss.

A practicable bridge leads to the (true) left bank of the river. The path, rough and broken, but never difficult, keeps within reach of the cool air and the foam of the dancing, tumbling waters. The ascent is steep and steady, and by the time the valley broadens out, the height lost in the zigzags has been almost regained. A meadow marked on the Government map as Thangme obviously serves at times as a yak-station. The track was now frequently broken and obscured by the streams from the flanks of Jubonu and the piles of rubbish, old and new, mostly hidden under low scrub, that they have brought down with them. The traveller who loses it, as I did, and finds himself stumbling among hidden pitfalls and climbing in and

out of stony ditches will, unless a philosopher, soon also lose his temper.

The valley presently becomes bare, and some prayer-flags, conspicuous on rising ground in its centre, near the ruins of a hut, built for the accommodation of the Lamas on their annual visit, mark the position of Alukthang. For this herd-station is also a place of religious pilgrimage. Thither every year climb a party of young Lamas from Pamionchi to offer a week's prayers to the demon of Kangchenjunga. A long *mendong*, or wall of inscribed stones, similar to those we had seen elsewhere, at Khunza and Jongri, attests the sanctity of the spot and the number of its devotees. The selection of this particular locality for such rites of nature-worship can be easily accounted for. It is the last point on the direct approach from inhabited Sikkim to the foot of Kangchenjunga which can be reached without traversing ice. It is practically at the source of the stream which flows, or appears to flow, from the great mountain. In reality, it is true, the glaciers which feed the Praig Chu fall from the wide horseshoe crest that links Pandim to Kabru, and you must cross it by the Guicha La in order to reach the actual base of Kangchenjunga. But this is a topographical detail that does not affect the primitive mind. From Alukthang the lower peak of Kangchenjunga is fully visible in the unusual form of a solitary, slender pyramid, the central object at the end of a long snowy colonnade formed by Kabru and its spurs on one side, Jubonu and Pandim on the other.¹ The principal glaciers flow from the former range, in the hollows of which the ice finds more feeding-ground than on the opposite precipices. It would be tedious and it is hardly necessary to explain their complicated relations, which may best be

¹ Mr. Bose gives Kabuikang and Tingchingkang as the names of peaks on the Jubonu Ridge, perhaps of Jubonu itself.



KANGCHENJUNGA FROM AIUKTHANG.

understood by the study of our map. No previous map has attempted to deal with them. Kabru sends down two broad streams, Pandim two narrow ones. Once upon a time they all met, even now their moraines mingle, holding little lakes and lake-basins enclosed behind and between their ridges.

The mountain scenery is naturally of a high order. Yet when I turn over again my photographs or my recollections, the Vale of Alukthang does not take its place among the most impressive pictures of Himalayan grandeur: it fails, so at least it seems to me, somewhat in scenic effect. The peaks are drawn up above it on either side in two lines, without prominent buttresses. Their slopes are uniform, and, partly owing to foreshortening, their summits lack individual character. The lower peaks on the Kabru range look, as Mr. Graham learned to his cost, as high as the north-eastern summit. The rock-pyramid of Kangchenjunga is an extremely elegant termination to the long corridor, but it has not the overpowering grandeur of the vast mountain-rampart when viewed from either of its northern flanks.

Some of my readers must have seen and may possibly remember an enormous picture by the Russian painter Verestchaguin, entitled, if I remember rightly, 'The Heart of the Himalaya,' which hung, a few years ago in the Grafton Gallery, between portraits—portraits of the most absolute fidelity—of my old Caucasian friends, Kasbek and Elbruz. That canvas represented the vale of Alukthang. Verestchaguin and his wife penetrated in mid-winter as far as Jongri. There they were caught by a heavy snowfall, and barely escaped after encountering serious peril. His brush recorded faithfully his impression of a white world of shining spaces where life ceases and death finds no prey. But the spectator feels that terror

rather than admiration was the motive in the painter's mind, and that he had had no leisure or sympathy to record the subtler effects of the snowy surfaces.¹

If we made some reservations as to the effect of the landscape by daylight, night revealed it to us in a new and exquisite aspect. What Walter Scott wrote of Melrose Abbey may be applied to Alukthang. 'Go visit it by the pale moonlight.' Our moon was almost full. Hidden behind the walls of Jubonu its orb remained long invisible, and the nearer snows were but faint and indistinct, while between their pale shadowy masses the whole peak of Kangchenjunga was fully illuminated as by a heavenly searchlight. The rock and ice were transfigured into a silver shrine, a visionary emblem of purity and aspiration. The worship of Kangchenjunga at that moment seemed very reasonable service. For long the shadow of Pandim lay over us, and its outline was sketched in cold grey on the flanks of Kabru. The night was far spent before the moonbeams creeping down the slope of Kabru at last struck our tents, and the full orb sailed serenely over the icy ridge into the narrow strip of sky overhead.

We proposed to ourselves for the next day an unusual luxury, an excursion without our baggage-train. To enjoy as many such excursions as possible: to mountaineer, that is, from a centre, or, better still, from shifting centres, ought to be the aim of the Himalayan explorer. We should have done it more had not my calculations been upset by the snowstorm and the consequent prolongation of our actual journey through a provisionless district.

Our tents had been pitched about half-way between Alukthang and the moraine, where a group of erratic blocks

¹ See *Esquisses de Voyage dans les Indes*, by Monsieur and Madame Verest-chaguin. For an example of how snow may be painted, I should like to mention the late Signor Segantini's picture, entitled 'Trust,' in the Public Gallery at Hamburg.

gave some shelter from the blasts that are apt to sweep suddenly up the southward-facing valleys. The level was almost exactly the same as that of Jongri—about 13,000 feet. From this camp we started betimes to ascend to the Guicha La, the relatively low gap that lies between Pandim and the spurs of Kabru, and gives access to the head of the Talung Valley, and the south-eastern glacier of Kangchenjunga. It had been reached previously by a few Englishmen, among them Major Sherwill, Mr. White, apparently twice, once with Mr. Bose of the Geological Survey and once with Mr. Hofmann of Calcutta. The latter secured a valuable set of photographs of the cirque at the head of the Talung Glacier. The height of the pass as measured by Mr. White is 16,400 feet, and this seems to be approximately correct. It would, as I have said, be hardly possible and not worth while to spend ink in trying to give readers an accurate idea of the glacial labyrinth at the sources of the Praig Chu, which the official map-makers have never attempted to grapple with. The curious and practically important feature of it is, that a climber can reach the ridge between the Praig Chu and the Talung Valley without once setting foot on ice. The natives of Sikkim, recognising the unlooked-for easiness of the passage, have accounted for it by a legend. Some local deity or demon, they say, constructed a staircase for his own use, or for the benefit of his worshippers. The traveller who is struggling among piled-up lumps of granite, as big as houses, will be apt to reflect that a demon, while he was about it, might have done his business better.

First we climbed the moraine of a steep glacier tongue shot out by Pandim; then we strolled round the banks of a tarn held in by the main Kabru Glacier,¹ which filled the

¹ Mr. Bose calls the glaciers that fall into the Praig Chu Valley from the Kabru range the Kochirangkang Glaciers.

trench on our left. Mounting a long hollow with the Kabru moraines beside us, we crossed the dirty snout of another Pandim Glacier. Above this we found a second lake-basin now nearly dry. Passing through a narrow place between the Kabru Glacier and the eastern hillside, we came on quite a large level, the site of a third lake, now drained, beyond which a little glen or dell ran up between the Kabru Glacier and a broad ice-stream flowing from the eastern spur of Kabru, I call the Guicha Glacier. This place is called Chemthang (15,250 feet—White). It would make a pleasant camping-ground.

Our coolies struck up the green slopes to the right, until we gained the foot of the vertical ridge of rocks that falls from Pandim towards the Guicha La, just under a castellated mass that is very conspicuous in distant views from the neighbourhood of Jongri. Here the ground became very rough, the boulders were very big, and the scrambling proved somewhat fatiguing. The bulk of the party stopped to lunch. But the midday mists were already assembling behind us for their march on the peaks, and I was too fearful of losing the view from the pass to be able to think about food, or even the rarity of the air, though we were now higher than Mont Blanc. I pushed on and was soon rewarded by reaching easier ground. During the last half-hour the ascent proved not at all steep ; and the walking was easy, wherever the remains of the snowfall that persecuted us to the last did not let one into pitfalls between the stones.

When I reached the pass Kangchenjunga was still quite clear. As Maquignaz and I sat on the snow a little below the gap and sheltered from the cold breeze that blew across it, we looked down an easy slope to the plain above the moraine of the Talung Glacier, from which Mr Hofmann took his admirable photographs of the cliffs between

Kangchenjunga and Kabru. Had the mountains been in their normal condition at this season, we should have run down to it; the descent is easy, but to retrace our steps in the soft snow would have been a toil and trouble from which we shrank.

Immediately opposite us stretched the stupendous eastern ridge of Kangchenjunga, visible in its whole extent from the second peak, 27,820 feet, to the 19,300 feet gap, the Cloud Gap, as I have named it, by which the lowland mists find their way to the Zemu Glacier. The summit was even more pyramidal in form than when seen from Alukthang. The rocky cliffs of its southern face, partly hidden from us by the nearer rocks above the Guicha La, on which two erratic boulders are conspicuously perched, fall with a steepness as near the perpendicular as Nature can attain. The icy curves of the eastern crest are borne up and lifted high against the sky by the massive tiers of precipices of a great buttress, throwing shadows which can be seen even from Darjiling.

A longer spur divides the Talung Glacier from the recess leading up to the Cloud Gap. The slope below the Gap has an unpleasant resemblance to the Gussfeldt Sattel, in the Bernina Group, but no slope can be judged until it has been tried. If this gap should prove practicable for coolies, it will be of the greatest service to mountaineers. Our camp on the Green Lake Plain could then be reached in three days from Jongri, camping the first night at Chemthang under the Guicha La, crossing the pass in the morning and proceeding to a bivouac under the Cloud Gap on the second day. My impression, however, is that this gap, though it can be forced by mountaineers, will prove of no use for a baggage-train of natives.

The lower portion of the Talung Glacier was as dirty as most Sikkim glaciers. It looked as if it terminated at our

feet, but as no glacier is crossed in the ascent, while in the account of the Guicha La in the *Routes in Sikkim* it is stated that the pass involves a day's march over glaciers, I must presume that it extends some few miles lower down the valley. Mr. Dover, the Sellas, and Botta followed me, and secured photographs of the peak before the clouds quite veiled it. Garwood did not arrive; he had tired himself by some independent divagations at starting. It was a misfortune to our party that he never fully recovered his powers in the Himalaya; but I think it would be hard on the mountains to impute his indisposition altogether to altitude.

On this occasion I walked up 3400 feet in about four and a half hours without halt; in the Alps one year, and again three years later, I timed myself as climbing 7500 and 7000 feet, in Norway this year (without a path) 6300 feet, in the same time.¹ There were no big boulders or fresh snow to hinder me in the Alpine climbs, but I have no doubt that, at heights over 12,000 feet, the natural pace of an average climber on easy ground is very materially diminished.

When we turned our faces to the descent, we were confronted by the peak of Pandim, formidable as ever, a mighty wedge of granite and glacier. Maquignaz and I had not been so particularly pleased with 'the Gods' Staircase,' as to desire to return by it. We struck out, therefore, across the level glacier that flows below the pass, and then glissaded and ran down the rubbish-slope to the narrow plain that stretches under the eastern moraines of the Kabru glaciers. This soon widened into the lake-basin we had crossed in the morning. As we reached it an icy blast, whirling up thin white mists from the lower valleys, met us full in face. It lasted for little more

¹ From Promontogno to the Piz Gallegione, and from Meran to the Olperer.



PANDIM FROM THE GUICHA LA.

than half an hour, but while it blew it pierced through our light clothes, leaving us as chilled as if we had plunged in a glacier stream. Our return to camp was without further incident. The Guicha La is, in truth, for any one but a coolie, a short and easy walk from Alukthang. After evenfall the moonlight was again superb. The spurs of Kabru and Pandim served as dark side-screens behind which Kangchenjunga, lit by a full moon, seemed to emit radiance from all its snows. We enjoyed one of Nature's most theatrical effects, shown in her noblest theatre.

The next morning we woke to winter; all the pools of the trickling streams from the snows of Pandim were crisp with frost, and the spray on the boulders in the bed of the Praig Chu had been transformed into bright icicles. The sun was all too slow in rising above the cliffs of Jubonu, and their shadows were long in descending the glaciers of Kabru, but when at last the warm rays reached us the temperature became perfect, and the atmosphere more delicately stimulating than even that of the High Alps. In the Vale of Alukthang there are no industrious peasants, eager at the first touch of spring and autumn to fertilise their fields and pollute their air, as the Swiss do round the villages of the Upper Engadine.

Garwood, always mercurial, was astir early and shot a musk-deer on the slopes under Pandim; Signor Sella photographed our environment from the same direction. I am afraid I did nothing useful, but wandered pensively about the long walls of inscribed stones, which bore witness to the number and piety of earlier pilgrims to this temple not made with hands, the threshold of the Sanctuary of the Snows.

From these to me undecipherable antiquities I turned my attention to Jubonu and made out a route, steep but practicable, for its ascent. I find it corresponds with the

description given by Mr. W. W. Graham in his brief account of his climbs.¹ To make out the top of Kabru among a long line of summits was at first difficult. I recognised, however, at last the north-eastern peak, but I was too much under it to study it to advantage. Sella's panorama taken from above Alukthang, shows the long, low eastern ridge stretching to the Guicha La, often lost under Kangchenjunga in distant views, and I presume it is from the bay enclosed between it and the far bolder southern spur of Kabru that Mr. Graham's ascent was effected. A peculiar feature he describes, the great wavelike cornice of snow on the top, was visible through glasses in 1899, on both the north-eastern and south-western summits. The latter was the one triangulated as 24,015 feet; where Mr. Graham got his height, '300 feet lower,' for the other I have failed to ascertain. I imagine that the ascent will differ in difficulty enormously from time to time, according to the state of the snow and how well the best route on rather intricate ground is hit off. Nothing, perhaps, is so hard for the novice in climbing to realise as the difference between a snowslope in good condition and the same slope when converted to blue ice, or when soft and treacherous from a recent fall. Many mountains are never difficult, but there is hardly one which may not at times be dangerous. Could this fact be impressed on tourists, many lives, some of them not without value, might be spared.

In returning we hit the proper track and had no more difficulty with brushwood and stony banks. At the foot of the zigzags below Thangme we enjoyed a delightful lunch and siesta on the mossy and shaded bank of the Praig Chu in full view of Pandim. The day was glorious to its close. When we regained the level of the Jongri pastures, we were greeted by a distant view of marvellous

¹ *Alpine Journal*, vol. xii.; *R.G.S. Proceedings*, New Series, vol. vi.



PANDIM

FROM THE VALLEY OF THE PRAIG CHU.

clearness: far beyond the foothills the broad bed of the Teesta was marked by a conspicuous silver ribbon winding about across the vague face of the vaporous plains, which seemed to rise to meet the soft pink edge of the upper vault.

Man, at least the species traveller, must grumble—and we accordingly found a pretext in the weather. It was too invitingly fine. It seemed a pity not to attempt a great peak. The Sellas suggested an assault on Kabru. After much consideration, and with deep regret, I declined to share in such an expedition. My determining reasons were the cold, and the condition in which we had found the snow at 16,000 feet on the Guicha La. To climb 8000 feet higher, to 24,000 feet, when the rivulets were hard frozen as low as 12,000 feet in the valleys, and the snow above was powdery, seemed to me extremely risky. I had a very vivid recollection of a narrow escape from frostbite on the Lysjoch in similar conditions, and I thought it unlikely that we could force our way up 8000 feet through soft snow, and probable that we might be badly frostbitten before we failed. I placed, however, my Italian guide at the disposition of his fellow-countrymen should they determine to make the attempt. Wisely, in my judgment, they gave up the project.

We thought at the time that a more direct route up Kabru than that from Alukthang might be found from the source of the Rathong, but subsequent views from a distance persuaded me that there is a somewhat intricate and perhaps difficult passage between rocks and icefalls to be encountered before the comparatively easy upper névé can be reached from this direction.

Our loftier ambitions laid aside, we agreed to spend a day of pleasure on the heights round Jongri. On the brightest of October mornings we walked over the frosty

pastures on which the flowers¹ were unfortunately past, to the gap at the western base of the rocks of Kabur (15,830 feet). Garwood strolled off up the grassy mound on our left, the Sellas and I (it was their second ascent) climbed up a strangely fractured rib of rocks overlooking the sources of the Rathong, and then turning the southern flank of Kabur attacked it from the south-east. Two low walls of rock, where a rope is useful but not essential, form the only approach to a difficulty. Above these a slope of loose boulders leads to the top, on which lay a broken flag-staff, probably the relic of some surveying party.

The climb, if it may be called one, is longer, but of the same class as the Riffelhorn used to be. The view is naturally extensive and remarkable. Beyond the nearer peaks, Kangchenjunga is well seen in a new aspect; the whole southern face and the upper portion of the great cirque at the head of the unexplored Yalung Glacier, are visible. Beyond the Guicha La, Simvu with its triple peaks, a Himalayan Piz Palu, and the Cloud Gap came into view. To the south the ridge-and-furrow ranges of Sikkim were spread maplike beneath our eyes. Again we saw the bright flash of the temple roof at Pamionchi, the disforested heights of Darjiling, and to the east of the ridge of Senchal the pale lilac plain and the still paler streaks of its rivers fading into formless, limitless space. The contrast between peak and plain was, from the picturesque point of view, once more the keynote of the panorama. Garwood, however, found a professional interest in the ugly little trenches, or side glens, falling from the Kang La Range. They terminate at a much higher level than the main valley, and their streams

¹ 'Poppy, *Potentilla*, gentian, geranium, fritillary, *Umbellifera*, grass and sedges,' according to Sir J. Hooker. The blue poppy is said to flourish here as well as above Lachen.

tumble down a steep range of cliffs in order to meet the Rathong. Geologists, it appears, call depressions of this sort 'hanging valleys,' a term which, if it does not express their peculiarity very intelligibly, is at least English, which is more than can be said for most novelties in geological language.

The surface forms of the Jongri downs themselves were somewhat of a puzzle to Sir J. Hooker. He noticed the 'enormous fractured boulders of gneiss of the same material as the rocks *in situ*,' the numerous pools, the curving ridges of large stones, and he felt 'forced to speculate upon the possibility of ice having capped the whole spur and moved downwards, transporting blocks from the prominences on various parts of the spur.' Looking from the top of Kabur, it was impossible to doubt that this speculation was sound, and, considering the date at which it was made, remarkably shrewd.

Before we descend from our last point of observation and turn our faces to the sun and the plains, I must seize the occasion to summarise the information we had gained as to the glacial features of the Kangchenjunga Group, and its capabilities as a field both for travel and mountaineering. Even at the risk of some slight repetition, it will, I think, prove convenient to my readers and more particularly to those—and I hope there will be many—who may become my followers, if I bring together on a few final pages some of the information that may be gleaned from previous chapters.

Let us begin with our principal field of discovery, the glacial features of the group. Four great trunk glaciers radiate directly from Kangchenjunga itself, flowing more or less to the north-east, south-east, north-west, and south-west. These are the Zemu Glacier, eighteen miles long, and the Talung Glacier, both draining to the Teesta; the

Kangchen Glacier, fifteen miles long, and Yalung Glacier, both draining to the Arun and the Kosi. The forked spurs that protrude south and west from Kangchenjunga, dominated respectively by Kabru and Jannu, enclose in the first case the Alukthang Glaciers, united not long ago in a single stream, and still divided by little more than their moraines, and the southern glaciers of Kabru, which fall into the separate glen of the Rathong; in the second case, three considerable ice-streams, one of which almost meets the Kangchen Glacier at its lower extremity, while another builds across the valley, out of the rockfalls from the tremendous cliffs of Jannu which encompass its source, a remarkable wall of moraine stuff, similar to those of the Allalein, or the Brenva in the Alps, and a third fills a glen, the stream from which joins the Kangchen torrent at Khunza. These will all be found clearly indicated on our map.

I must next mention the minor but considerable ice-streams that are seen from Darjiling and Gantok to flow from the southern slopes of Simvu and Siniolchum, and those surrounding the northern bases of Narsing and Pandim, which, in default of any particulars from Mr. White, have been laid down from our distant sketches and photographs with some vagueness.

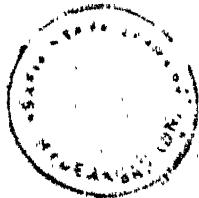
The ice at the base of the Zemu and Alukthang Glaciers descends to about 13,000 feet; this is its lowest level in Sikkim. Taking into account secondary glaciers, the number of square miles covered by snow and ice in the group, accepting the 24,340 peak close to the Jonsong La as its northern limit, may be reckoned approximately at 327. According to Professor Heim snow and ice cover in the Mont Blanc group 100 square miles, and in the Bernese Oberland 193 square miles.

Next I will add a few words as to the most notable

STATE LIB.

7.11.1949

KANGCHENJUNGA FROM NEAR JONGRI.



and distinctive features of these Sikkim glaciers. Let us begin at their birthplace. By means of field-glasses we ascertained that the transformation of snow into névé takes place within a few hundred feet of the crest of Kangchenjunga, just as it does near the top of Mont Blanc. The steep snow-slopes that cling on the faces of the peaks are, as in the Caucasus, fluted by frequent miniature avalanches.

In the upper icefalls the ice is apt to assume strange forms. I may best describe them by comparing them to the earth pillars found in the Alps in certain friable soils: the glacier is converted, not into seracs—towers and pinnacles severed from one another by profound clefts—but into clusters of ice-cones, repeating the same form monotonously. Lower down the main glacier is apt to be terribly uneven, a confused labyrinth of huge grey mounds, stony ridges, and hollows filled with yellow pools, but it is seldom much crevassed. We never had occasion for a rope. Progress is toilsome and constantly delayed, but rarely stopped. The surface swells and falls in vast undulations, heaps of ruin, stones like those of Baalbek piled one on another and separated by deep, tortuous ice-valleys. Owing to the steepness of the range, the amount of rock surface exposed, and the rapid disintegration caused by extremes of heat and cold, the trunk ice-streams are buried and hidden under piles of rubbish. Materials enough to build a city are brought down by the gigantic sledge which Nature employs in her mountain architecture. The torrents that flow from these vast glaciers are not, however, in proportion to their size.

The features just enumerated may, I doubt not, find an explanation in the local climate. Intense cold follows on great sun-heat; an enormous deposition of moisture, whether in rain or snow, takes place during many months

of the year. Ice under such conditions becomes more plastic or viscous, or whatever term the glacialist of to-day may prefer, it cracks less and is more malleable, it loses more by evaporation. The sun, except in winter, as we learned to our cost, soon spoils the night's crust that helps the traveller on Alpine snowfields. Rocks, again, are quickly split by alternate heat and frost, and the granite cliffs send down ceaselessly their tribute to the ice-sledge as it glides beneath them. With regard to traces of an ancient extension of the ice, it must be obvious to any trained eye that it has been in times geologically recent a good deal lower than it is now. Glacial action may be detected for two or three miles below the present end of the Zemu Glacier. Vegetation and denudation make it difficult to follow it further, but there is no doubt that in more remote ages the ice reached below Lachen. Throughout Lhonak the surface of the earth shows signs of glacial shrinkage. We discovered there an enormous bed of an extinct glacier. Its feeding ground was comparatively low, 19,000 to 20,000 feet, and it had consequently perished when the climate improved. Lhonak is a region where the conservative action of ice is admirably illustrated in the comparatively shallow valleys and smooth hillsides.¹

A European Association has been formed to carry on the work initiated by the Alpine Club of obtaining measurements, from all parts of the world, of glacial oscillations, which are not without considerable importance as indications of climatic variations. I have reason to hope that these records may be extended to India; but

¹ I may refer to my paper on 'The Conservative Action of Ice' in the *Geographical Proceedings*, New Series, vol. x. p. 799. I do so with more confidence since several eminent geologists, among them Prof. Garwood, have expressed their general agreement with my argument. The opposite doctrine is still much taught by the older geologists, and not infrequently accepted without any independent examination of the evidence by their pupils.

there is difficulty in finding ice-streams near enough to permanent stations to be systematically visited, and there have been in the past artificial difficulties arising from the extreme complexity of the departmental system at Calcutta, difficulties which, I hope, may be overcome by the cordial good-will shown by the present Viceroy, Lord Curzon, towards all reasonable scientific proposals.

As to lake-basins, I saw none which were not accountable for by agencies other than excavation by ice, but a great many, full or empty, which had been created by the vast dykes built by glaciers with morainic material. Of these dykes the finest examples are that of the Jannu Glacier below Kangbachen, and that of the extinct glacier in Llionak. There are several minor basins which still hold water on the way to the Guicha La.

In the Sikhim Himalaya the ice is, as in the Caucasus, very much in the habit of leaving long grassy alleys enclosed between the moraine and the mountain-slope. These are a great convenience to explorers. I am disposed to attribute their formation to the action of the torrents falling from the hillsides, which by continually washing away the bottom of the moraine prevent its impinging on the lateral slope and keep a channel open for themselves. A similar feature may be seen on the Boval path beside the Morteratsch Glacier in the Engadine.

I may be expected to add something to the discussion on mountain sickness that continues, without much sensible advance, to fill pages, and even volumes, in mountaineering literature. The results of our experiences would have been more satisfactory had they not been impaired by the exceptional conditions—we waded instead of walked or climbed. In my experience, *quot homines, tot sententiae*. No two persons feel mountain sickness in exactly the same way, though mountain sickness, like sea sickness, is a

painful reality to the majority of mankind. My party were affected most unequally; Mr. Dover, the Road Inspector, never appreciably suffered—he even gained weight on our tour; Garwood was for forty-eight hours practically incapacitated, though sunheat on new snow had probably much to do with his symptoms. Most of us, both Englishmen and natives, felt, in various degrees, our powers diminished; we experienced an indisposition to exertion, bodily or mental—what Stevenson, writing of the climate of Davos, calls ‘an underlying languor of the body’—a slackening of pace and increased breathlessness in going uphill. We suffered most on first reaching an elevation of 15,000 to 16,000 feet; there was no increase in our symptoms on rising over 20,000 feet. Some of our men, particularly the Gurkhas, walked steadily at that height. I was myself never so uncomfortable as I once was on Mont Blanc. It used to be said that no one could climb the last slopes of Mont Blanc without frequent halts. The last time I ascended the mountain, I walked straight up the 1500 feet from the Vallot hut to the top. In the Himalaya I was able to walk, at the end of our tour, from 13,000 to 16,000 feet without a halt.

It is very difficult to draw definite conclusions from these experiences. For it is impossible to eliminate the effects of soft snow. We and our Alpine guide were sometimes quite exhausted by the struggle with it; but soft snow is killing at any level. I have seen Melchior Anderegg, one of the greatest of Alpine guides, dead-beat for the moment, at a height of 6000 feet, while tracking a path over the Great Scheideck in winter. I am however ready to commit myself to an opinion. Training and habit and attention to diet will not do away with mountain sickness, but they will go on reducing its area and its virulence. We have practically driven the enemy up 8000 feet in

the last fifty years. Our predecessors, at least a very large proportion of them, both guides and travellers, suffered severely fifty years ago whenever they went above 12,000 feet in the Alps. At the same altitude a crowd of tourists now wanders with impunity—as far as the ‘rarity of the air’ is concerned. There is, so far as we can learn from high authorities, nothing in the constitution of the human body or of the earth’s atmosphere to prevent this acclimatisation being carried up another 8000 feet. I will make bold to prophesy that Kangchenjunga and its loftier rivals will one day have a flag on their summits. Let who likes contradict me. Time will show.

But mountain sickness is not the only impediment to the ascent of Kangchenjunga. There are few mountains I know of more formidable aspect. Still it is a very big mountain, and giants generally have some weak place in their harness. I am inclined to agree with Mr. Graham and the late Emil Boss that there is very little hope for assailants by any of the ridges or faces visible from Darjiling. The foot of the eastern ridge can easily be reached from the Zemu Glacier, but the climb of 9000 feet along it will stop ordinary mortals. The southern cliffs are in appearance hopeless. The obvious key to the upper part of the mountain is the northern ridge, and the best way to reach it seems to be from the Kangchen Glacier. It is possible that a very careful and close inspection may reveal a way of getting past the lower icefalls without incurring too great danger from avalanches. Garwood holds that this way will be found on the true right of the glacier. Higher up the long steep névé stream is broken by two short rockwalls which appear surmountable. Above there is a ‘Grand Plateau,’ with crags near it which would have to furnish sleeping quarters. Some 1200 feet more would still have to be climbed. But the last ridge looks practi-

able. There is a tower on it perhaps 100 feet below the top. When this is passed the climbers will know they have conquered. Starting from our camp at Pangperma I think two nights are likely to have to be spent under light shelter. The point which would give me most anxiety in planning an assault would be transport. Local coolies will never be got to go high enough. In default of Alpine porters or specially trained Gurkhas I see no way of overcoming this difficulty.

The season to be chosen for such an attempt is also a matter of much perplexity. I have consulted Sir Joseph Hooker, Major Waddell, and Mr. White. We all agree, I think, that in a normal season the end of the rains would be as good a time as any. But a man who wishes to give himself every chance should start boldly in the rains, taking advantage of the fine spells between them, and being on the spot the moment they ceased. The rains are not nearly so bad north of Kangchenjunga as they are at Darjiling. We constantly saw Darjiling wrapped in vapour when the snows were clear. The cost of such an expedition would no doubt be heavy, but a mere trifle compared to that of the polar adventures which find enthusiasts to provide funds for them.

Descending below the snow-level and leaving the glaciers, I have still one or two serious, or scientific, matters to which I ought to refer.

There can, I think, be no doubt that the situation of Darjiling is very far from the best possible for a health resort in this region. It was chosen partly at least for political reasons. It stands on the screen of foothills—it is true, on the north or less exposed side of it, having therefore a smaller rainfall than Kursiung, on the south side, but still on the screen that receives the first fury of the rainstorms that sweep up from the Bay of Bengal.

This exceptional exposure was demonstrated forcibly in the great storm of September 1899. The injury done round Darjiling itself was in part caused by the reckless clearing of forest, and consequent exposure of soft slopes at high angles, arising from the spread of tea-plantations. But it was the streams fed by the outer foothills, rather than those from the interior ranges, that swept away bridges and destroyed villages. The observant visitor will hardly fail to notice in the character of the forests a proof that the worst of the rains strike the foothills and surge up the great gap of the Teesta. Further west, towards and beyond the Nepalese frontier, the vegetation is less rampant; the valleys at the western base of Kangchenjunga are dry and open compared to the glens of the tributaries of the Teesta. The Vale of Kangbachen is not more densely wooded than that of Lauterbrunnen, while the Zemu forests are almost impenetrable.

An ideal summer sanatorium would probably be found in the Chumbi valley, which, for reasons best known to politicians, we did not annex fifteen years ago when we had an opportunity of doing so as a penalty for the Tibetan invasion of Sikhim. But, short of this, there are spots—Lachen, for instance, or the downs at the head of the Singalela ridge—where some kind of health station, which would bear to Darjiling—in climate, at least—the relation the Engadine bears to Monte Generoso, may in the future be established. Difficulties of transport will be alleged, but, looking to the development in the last ten years of mountain railways, these difficulties, though actual, will not, I believe, prove permanent ones. This, however, is a matter for the future, perhaps not a very near future. For the present, one of the great wants of Independent Sikhim is horse-roads. In past years pains and money have been expended on patching up the

fantastically circuitous and precipitous native tracks which might, I believe, more wisely have been used in constructing one or two trunk horse-roads, on lines laid down by experts. I understand the authorisation of the Government has been given to steps in this direction, and that some steps have already been taken. My companion in Sikkim—Mr. Dover, now the Road Engineer—writes to me of bridges built, bungalows erected or restored, posts and telegraphs established, Lachen and Lachung—the villages in the Teesta Valley that correspond to Saas and Zermatt—opened to travellers. The Indian Government already publishes a list of tours and resting-places; it has taken, therefore, the initial steps towards creating a mountain playground for Calcutta. A few more efforts in the same direction, and these comparatively slight efforts, might produce great results. Some eight miles of new path and a couple of bridges would link Pamionchi to Jongri and the southern glaciers of Kangchenjunga, and enable a horse-party to go up this way and return by the Singalela ridge. Some ten miles of cutting through the forest would open the Zemu Glacier; stone bungalows on the plan of Alpine 'Clubhuts' might easily be built at the Green Lake at the north-eastern base of Kangchenjunga, at a height of 16,000 feet, and at Jongri. The tour of Kangchenjunga must, however, I fear, for years to come be a serious matter, apart from political difficulties, since it means coolies, and coolies are—well, they represent time and money. We can hardly ask the Indian Government to imitate the Canadian Railway Company, and supply Alpine guides to aid explorers. A climbing party with such aid might, I think, make the tour of Kangchenjunga in a fortnight from Jongri, could they force the 19,800 feet gap at the eastern base of the mountain, and the 21,000 feet gap to its north.

On our return to Jongri that night we lit a blazing bonfire and sat round it under the brilliant stars. Our camp-fires had, as a rule, been poor things, owing to the scarcity of fuel ; but here on the verge of the timber line there was no lack. Our blaze had a quite unintentional success as a beacon. A servant in 'The Shrubbery,' the Lieutenant-Governor of Bengal's residence at Darjiling, ran to Sir John Woodburn with the news that there was 'a new star on Kangchenjunga.' A telescope revealed the terrestrial nature of the phenomenon and gave the first news that we had successfully accomplished our enterprise, and got round Kangchenjunga.

CHAPTER XII

THE RETURN TO DARJILING

NEXT morning a marvel happened. Our coolies—the reduced staff that was left to us after the departure of the halt and the blind—showed great impatience to obtain their packs, and having got them, set out without any delay. Before we had concluded our own preparations we saw them filing off briskly along the pleasant terrace path that runs close under the top of the long spur dividing the valleys of the Praig Chu and Rathong. The morning was exquisite, and we strolled in a leisurely way after them, stopping often to enjoy the scenery and photograph the views of the snows; for, relying on experience, we had no fear of not being able to catch up our baggage-train, even before we wanted to.

Our path was at first everything that a mountain path should be. Lifted on the high, narrow promontory, called by Hooker Mon Lepcha, it wandered along its smooth crest, dropping gently from lawn to lawn. The open spaces were fringed by Alpine rhododendrons.¹ Scattered firs served to frame picturesquely the frequent views of Kangchenjunga and Pandim. The last bluff, below which the ground fell suddenly and steeply towards the junction of the streams, was, after the fashion of the country, marked by prayer-flags. It commanded two views, one sublime, the other exquisite. We looked down the gorge of the Praig Chu,

¹ *R. Anthopogum* and *Setosum*.—Sir J. Hooker.

which, 'in eight miles, waters every variety of vegetation from the lichen of the Poles to the palm of the Tropics.' We looked up again to the great cliffs of Pandim and caught an unlooked-for glimpse of the face of Kangchen-junga that rises above the Yalung Glacier.

Then we plunged with regret into the thicket, or jungle. The rhododendrons became larger, the path was often a dark tunnel beneath their red, writhing stems, where but few flashes of sunshine pierced the roof of foliage and relieved the forest gloom. The descent before us was one of 6000 feet, nearly as long as that from the Grands Mulets to Chamonix. It was made longer by the fact that owing to the denseness of the vegetation, short cuts were out of the question.¹ Only occasional glimpses could be caught of the white foam of the torrent at the bottom, and for hours we never seemed to get nearer it. As we went down the character of the forest gradually changed: deciduous trees, oaks, and chestnuts, mingled with the firs; bamboos filled up the rare gaps. We were descending below 10,000 feet for the first time since leaving Lachen five weeks before. A few ruinous shanties in a cleared patch marked the native sleeping-place called Bakhim. Our path now plunged, the bamboos grew more frequent, the tall-stemmed, broad-leaved trees gave a heavier shade. Down, down, down went the track in a continuous zigzag, until at last the distant murmur of the river turned into a roar, and we dropped on to the rickety bridge that spans its foam; a frail structure of withes and boughs, such as men who had never before had to build a bridge might feel proud of as a first attempt. It answered its purpose, however, in transporting us to the further bank. Once across we began to repent of our groans at the monotony of the long

¹ 'Abies Brunoniana, yew, oak, various rhododendrons, and small bamboo,' 8650 feet.

descent; henceforth there was no lack of variety in the track. It was a succession of ups and downs; we were continually climbing ladders, or descending broken attic stairs by the help of roots and creepers; the intervening levels were rickety terraces built with bamboos along the face of the crag. There was no danger to life or limb, but there was great trial to the temper.¹

About 2 P.M., an hour after leaving the bridge (7300 feet), we were met by a messenger sent up to meet us by Rinsing, whom we had despatched two days in advance to Pamionchi. He warned us that we should hardly get out of the forest before nightfall. We determined to do our best, and made what haste was possible on such ground.

We were traversing the precipitous side of a sinuous and densely wooded ravine. The vegetation consisted—I again quote Sir J. Hooker—‘of oak, maple, birch, laurel, rhododendron, white *Daphne*, jessamine, *Arum*, *Begonias*, *Cyrtandaceæ*, pepper, fig, *Menispermum*, wild cinnamon, *Scitamineæ*, several epiphytic orchids, vines, and ferns in great abundance.’ Yet various and luxuriant as the growths were, they did not rival in fantastic exuberance those we had seen in the side glens east of the Teesta during our upward march. I am convinced that the deep break in the foothills, through which that river flows, acts as a funnel to suck in and carry the moisture of the plains as far as the frontier of Tibet. The snowfall of the great September storm extended, as we learned to our cost, over all the sources of that river and the ranges behind Kangchenjunga that encompass them.

Now and again the vista opened in front and we saw a

¹ Mr. Bose writes:—‘Path extremely narrow. There is scarcely foothold at places, one or two bits very steep. I have sometimes to crawl on all fours and sometimes to hang down holding on to creepers.’

distant buttress of the hills, a brow crowned with cottages and cultivated fields, closing the downward view. This was our goal, Yoksun, the nearest village to the snows. At first we felt confident of reaching it. But presently a deep bay, round which we had to pass, opened in the hills, the ladderlike climbs began to get longer, torrents had to be crossed. In one of these our predecessor, Mr. White, lost a coolie;¹ we found them all bridged or fordable. We got warmer and warmer in the lower air; quickening the pace we stumbled—at least I did—in the premature dusk of the forest over the loose bamboos laid against the steep banks and cliffs. The shadows deepened, and the swift darkness of tropical night threatened to overtake us. Overhead the green parrots screamed among the branches, and the mocking jabber of invisible monkeys drowned—it was perhaps as well—our brief ejaculations.

We won the race with night. Just as it grew too dark under the branches to pick our footing open sky appeared in front. As the first stars pierced the vault, we emerged from the wilderness, and met that sure sign of civilisation—a fence. In the pale gloaming we could just distinguish an arbour decked with golden flowers. Some Tibetan saddle rugs were spread on a wayside wall. A couple of villagers invited us to take our seats on them, which we did somewhat reluctantly. In a few minutes we were joined and greeted by a company dressed in yellow togas, priests and acolytes from the Dubdi monastery. They brought with them bamboo mugs of *marwa*. We welcomed that insipid drink; we should have welcomed anything drinkable. The essential compliments were

¹ Mr. Bose describes the accident. 'The poor man was crossing a furious torrent over the usual frail bridge customary in these parts, made of a trunk thrown across, when he lost his balance and fell with the load on his back. He was, of course, instantly carried far away, and was probably smashed to pieces. W., who had crossed before, was watching him, and the sight was heartrending.'

exchanged, and we resumed our march in the deepening dusk. It had become a procession. The monastery band had arrived. By the fitful light of torches, to the blowing of horns and the clashing of cymbals, we wandered on for twenty minutes along a maze of field paths, until we heard a babel of voices and found ourselves surrounded indeed by our coolies, but not as we had expected in camp. Not a tent was pitched.

By degrees we discovered the clue to the situation ; the intention which had underlain the very unusual activity of our staff. From Jongri to Yoksun is reckoned three marches up and two down. The coolies had felt confident that setting out late we could not possibly accomplish the distance in a day, while by a forced march and with a good start they hoped that they might secure for themselves after all their hardships a night of undisturbed revelry. They had said in their hearts, 'Yoksun is far, but if we set out betimes we may get there before night. The Sahibs will linger to make pictures ; they will have to sleep in the forest. We meantime will drink and make merry with the *marwa* and fruits of Yoksun. We have been too long in the wilderness with the madmen who make villages in the snow. Let us enjoy ourselves for at least one night.'

Our appearance was an unexpected blow to the would-be revellers. Their practical joke had recoiled on their own heads. They had just settled down, the Darjiling sirdar was already in a decidedly happy frame of mind, but had by no means reached oblivion, when the weird sounds of the drums ecclesiastical disturbed his peace. In another minute the stern voice of the Road Inspector was in his ears, 'Where are the tents ? Where is our supper ? Where is Penchu ?' Penchu—I name him *honoris causa*—was our long-suffering and most deserving cook.

Fortunately the evening was still young and the

revellers had not had time to proceed far, so that the sirdars, if hardly sober, were by no means incapable. Remonstrances and threats soon resulted in the upheaval of our little tents, the hubbub subsided, tea was produced and followed by a meal, and the coolies withdrew to finish the evening under the hospitable shelter of the neighbouring cottages.

Before quitting us at night the Chief Lama from the Dubdi monastery had begged us to honour him with a visit. I readily agreed, and rather rashly promised to make it before breakfast next morning. I had not taken into account the fact that the monastery stands on a hill a thousand feet above the village. After our 'little breakfast,' at which the appearance of bananas showed that we had returned to the land of fruit, we set out, slightly surprised and pained by the length of the climb before us. A pleasant stroll across the undulating plain on which the cottages of Yoksun are situated led in a quarter of an hour to the bank of a slender stream, and the foot of the zigzag path that ascends to the monastery. At this point the band which had played us into camp on the previous evening was waiting. To the discordant sounds of drums and cymbals we climbed the zigzags. As we approached the platform on which the temples stand we saw that a troop of mitred Lamas had collected on the verge of the sacred precincts. Of a sudden, resonant blasts were blown from two of the enormously long trumpets borne up by boys, resembling those figured on Luca Della Robbia's Singing Gallery at Florence, which form part of the furniture of a Sikkim temple, while clouds of incense rose from stone altars on either side of the gateway, which was spanned by a triumphal arch of boughs and yellow flowers erected in our honour.

On our arrival the Lamas formed a procession, and led

by the band we found ourselves marching in their centre round the level grassy court or platform. After passing between the chief temple and an older one in its rear, we were conducted to the door of the larger edifice, a wooden building about the size of a Bernese peasant's cottage, and like Swiss cottages handsomely carved.

Through the branches of the ancient weeping cypresses (mentioned by Hooker), in the clefts of which some purple orchids were still flowering, the broad snows of Kabru shone in the morning sunshine, closing the deep shadowy cleft in the hills through which we had just fought our way. The scene and its setting were most fascinating, a picture primitive and fantastic, real and at the same time almost incredible in its antique air. In the priestly procession and the simple rites, the ancient world seemed to live again, protected from the changes of the centuries, in a paradise to which no beauty of Nature was wanting.

Passing under the handsome carved lintel and through the hall of the Four Quarters with its portentous demons we entered the inner chamber, as usual a rectangular room, the roof of which was hung with silk banners and supported by a double row of carved and painted wooden columns. To our agreeable surprise we noticed along one of the walls a long table spread with a repast of oranges, bananas, and cakes, and decorated with flowers with a taste which would have done credit to a London hostess. After duly paying our respects to the Buddhas and Buddhisatwas, who looked down in a long row from the head of our board, and exchanging the usual compliments, we entered into conversation with our amiable hosts. They were, it appeared, anxious to secure our supposed influence in inducing the British authorities to confirm their recent choice of a new abbot. After breakfast we spent some delightful moments in the precincts, feasting

our eyes with the prospects in every direction. Dubdi stands at a height of 7000 feet on a spur overlooking the lower country. The schistose foothills to the south have no cliffs or precipices, they lie like gigantic waves at the feet of the inner and more rigid ranges of gneiss and granitic formation. Far below the Rathong cuts its way through a deep green trench. The farms of Yoksun lie on a broad shelf or flat-topped spur 2000 feet above the water. Yet the Yoksun Plateau bears obvious signs of having once formed part of the bed of a glacier.¹ How shall we account for its present relation to the valley bottom? In my belief the following hypothesis best meets the local facts. The present level of Yoksun marks that of the bed of the southern glacier of Kangchenjunga at this point during a period of great glacial advance, and the trench 2000 feet below in which the river now flows measures the amount of fluvial erosion since that epoch. Yoksun lies in a straight line with the upper valley, and the stream makes a curve round it. All this region would repay close study from experts in glaciology, but the tremendous action of water combined with the denseness of the forest may render their task more difficult and less certain in its results than elsewhere.

Historically also, Yoksun is not without considerable claim to the traveller's notice. According to local legend three Tibetan Lamas, who in the middle of the seventeenth century had set out from different quarters to convert Sikkim, met here and determined to seek for a ruler to govern the country. One was found in a Bhutia chief, and a dynasty set up. This story represents the popular

¹ Sir J. Hooker writes:—‘It is the most level area I know of in Sikkim.’ ‘It abounds in depressions all floored with clay.’ ‘All around’ a part 100 yards in diameter ‘were great blocks of gneiss.’ These facts go far to confirm my hypothesis. There would seem to be a similar plateau, possibly due to similar causes, in the Yangma Valley in Nepal.—See Hooker, vol. i. p. 263.

view of the origin of the Sikhimese State. In fact, monks who belonged to the weaker party in Tibet sought a refuge where they could enjoy the fruits of the earth in security. Under a ruler of a kindred race they established themselves as masters in the land of the Lepchas and sprinkled the hill-tops with their monasteries. This alien state south of the Himalayas would have been swallowed by the Nepalese tiger but for the entrance on the political field of the British lion. The Dubdi monastery claims to be the earliest seat of Buddhism in Sikkim, and the village below was its first capital, before its rulers were led by fear of Nepal to draw into closer relations with Tibet and to fix their residence on the farther side of the Teesta.

On our return to camp we found our coolies recovering from their happy evening, and there were still three hours of forenoon left when we set out on our march. There are two paths from Yoksun to Pamionchi, the hill-perched monastery, that shines as a star in the dark verdure to the climber on the higher ranges. We took the path on the right bank of the Rathong, which involves two very steep descents of over 2000 feet in crossing the valley of that river and its tributary the Ringbi Chu. The first mile across the meadows of the Yoksun tableland was charming. Our eyes, weary and sore with the lustre of the snows, rested with relief on the luxuriant verdure that surrounded us. The lofty trees, the irregular copses of laurels and brambles and dwarf camellias dividing agricultural land and comfortable homesteads, the pools in the hollows fringed with berberis and bamboos, the mosses and ferns on their banks, were a delightful change after the sublime monotony of the heights we had traversed. The descent was steep but easy, the track ran from farm to farm until it came at last to the edge of the deep brimming torrent. In these warm depths the vegetation was exquisite, and

the feathery bamboos grew in prodigious clumps. Two bridges spanned the stream. One was a typical rope bridge, the other a more modern erection, built on the ordinary Alpine principle. Signor E. Sella devoted himself to be photographed in the centre of the rope bridge.

The ascent before us must have been one of nearly 3000 feet, but the path was pleasant and the heat by no means excessive. The first part was the steepest; on the higher slopes the track wandered across cultivated land and past occasional clusters of farms.

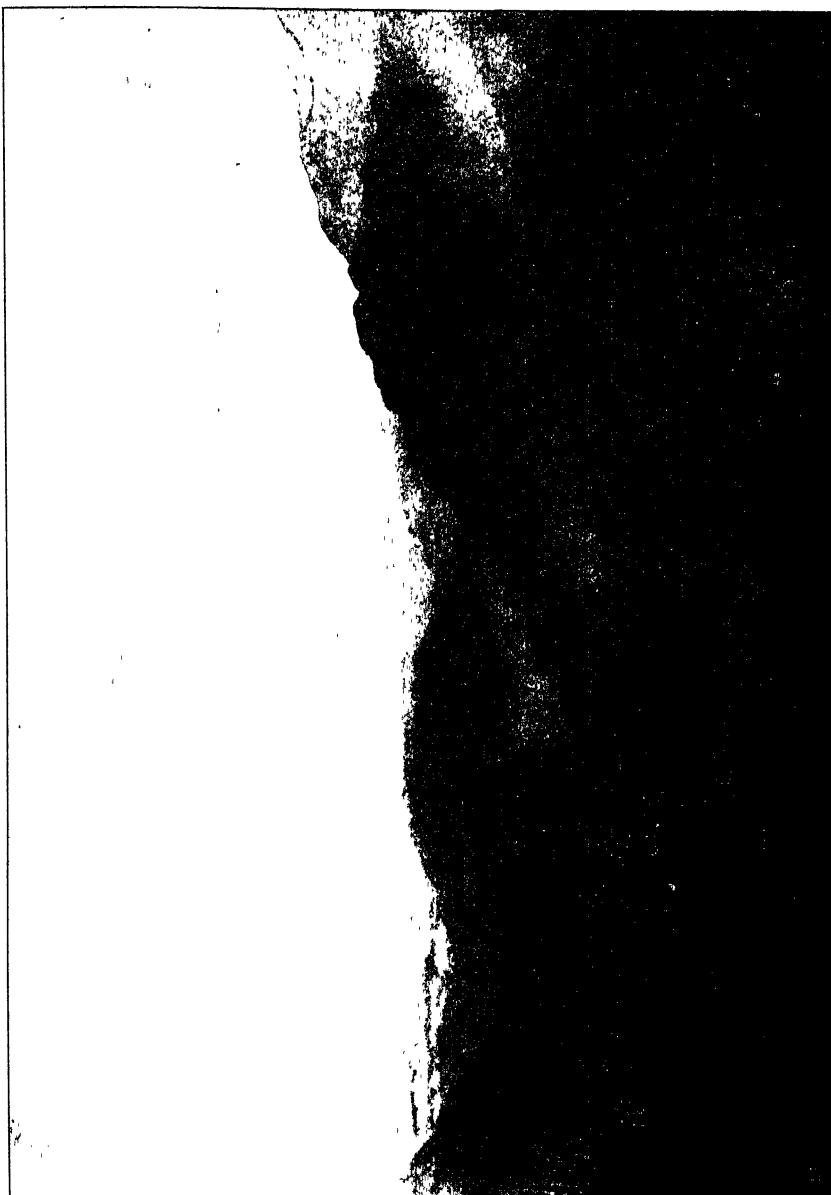
The day was marked by the number of deputations we were called on to receive. Rinsing, who had preceded us from Jongri, had spread the news that travellers of much importance were passing through the land. Consequently every monastery sent its band and every village its delegates to welcome us. Nor was this all. At every few miles a roadside arbour had been extemporised out of green boughs and decorated with yellow flowers, and in each we were expected to take our seats, suck oranges, and sip *marwa* while we exchanged compliments with our amiable hosts. The first of these interludes was provided by the Katsuperri monks, whose dwellings lay at some distance above our path. The villagers were of the types usual in Sikkim. The majority were Nepalese immigrants, or Bhutias with broad faces, narrow Tartar eyes, and a quick but shrewd expression. There were also many Lepchas, delicate in frame and feminine in feature, for the most part short of stature, though some exceptions would have been remarkably fine specimens of humanity anywhere.

At a village, Tingling, perched on the narrow spine of the hill we had been climbing, a more substantial arbour and repast awaited us. Hence our course was first down a very steep hillside, and then at a level round the deep

hollow of a minor stream, the Risu. A second plunge brought us to the waters of the Rungbi, beyond which rose the long slope of the hill of Pamionchi. On the further bank we found a troop of horses waiting. Our long walk had reached its end. There would be henceforth no interruption to the bridle-road that would bring us to Darjiling. We might easily have ridden up to Pamionchi that night, but our coolies would not have arrived before dark, and we were very willing to fall in with the plan arranged for us by Rinsing and to camp half-way up the hill. Sikhim ponies care as little for hills as their masters, and to canter briskly up over the steep fields and meadows was a new and pleasant sensation. On a projecting brow just above a farm and below the forest which clothes the higher ground, we found under a noble tree a table spread with light refreshments. Peasants soon came up bringing more fruit and vegetables. The scene was like nothing so much as a picture by one of the Bassano painters of a Venetian picnic. We spent a delightful evening watching the sun set on the snows and the lustrous shadows spread and deepen over the hills and dales through which our last two days' wanderings had led us.

In the cool of the morning we continued our ride, mounting on the shady side of the mountain through a wood of chestnuts, oaks, magnolias, and laurels. The under-growth was not nearly so lavish, nor did the creepers form such a tangle overhead, as in the forests east of the Teesta. I have no statistics of the rainfall at Pamionchi, but the vegetation indicates that this part of Sikhim is less wet than the outer foothills, or the valley of the Teesta, which draws the rainclouds from the plains into its recesses.

The noise of a temple band gave us notice that we were near the monastery, and, cantering along a green glade that was an ideal of sylvan beauty, we alighted, not before



KWEEU AND KANGCHENJUNGA FROM PAMONGCHU.

an altar of Pan, but under the verandah of the Travellers' Bungalow. It is a wooden building, well planned and admirably placed—the Sikhim bungalows are generally well placed—facing the snows, on the very brow of the hill. But like too many of these edifices in Independent Sikhim the fabric was on the way to become a complete wreck, and the furniture was in ruin already. The boards had rotted, the balconies and floors gave way underfoot, the chairs and crockery were mostly broken. Disorder and untidiness reigned everywhere. The Chowkidar, or Guardian, was a youth incapable of being stimulated, even by Rinsing, into the smallest attempt to perform the duties of his post.

We had plenty to eat and our own cook, and, accustomed as we were to do without the luxuries of civilisation, we did not seriously suffer. But it is curious how much more repugnant to the taste artificial squalor is than the nakedness of Nature, and *squalid* is the only word that describes the state in which we found this bungalow.

The temple stands about a quarter of a mile farther east on a higher brow commanding a complete panorama. To reach it we passed a fine Chait and a short row of priests' houses. Pamionchi has been fully described by Sir Joseph Hooker and by more recent travellers. The temple has been partly rebuilt, and the thatched roof unfortunately replaced by the zinc abomination that shines so resplendently when seen from twenty miles off. In front of it is a paved court surrounded by a low wall. A high flight of steps leads up to the carved doors of the temple, which are painted in bright colours and heavily hung with amber draperies. Inside are the usual altars and prim meditative figures of Buddha and his Saints, encompassed by walls frescoed with all the queer and horrible polychromatic demons of an earlier worship. The room over the shrine is used as a library, and though much was destroyed

by the Nepalese when they last invaded Sikhim, enough manuscripts remain to fill many cupboards.

Beyond a moist, tangly hollow filled with plants, flags and waterlilies, which give the ponds an English air, stand the ruins of a former residence of the Sikhim Rajas. Our ponies walked up the broken stairs that led to platforms commanding exquisite views with a confidence in their own powers we did not fully share at the time, though further experience proved to us that it was thoroughly justified.

Later in the day Rinsing arranged for us a 'Devil Dance.' The occasion was propitious, as a party of young Lamas were staying at the monastery previous to going up to Alukthang to offer a week's service to the God of Kangchenjunga. These grotesque performances are often witnessed at Darjiling by tourists. Such an exhibition must lose much by the absence of the natural setting provided at Pamionchi. The dance itself is extraordinarily picturesque. At one moment I was reminded of the Dancing Dervishes of Constantinople, at another of Drury Lane. Since, however, the object in view is rather dramatic representation than the excitement of religious ecstasy in the actors, the performance inclines rather in the direction of pantomime. But no pantomimic artist of the London stage ever designed such terrible masques or such fantastic beasts as these Buddhist monks have invented. They are past masters of the Grotesque and the Ghostly. There were demons with horns and goggle eyes, demons with death's heads, a creature with a stag's head, resembling Actæon after his indiscretion. The robes they wore were priceless ancient Chinese silks and brocades; the costume of each dancer was said to be worth on the spot some £50. What would they not be worth in London? As they whirled round and round, their skirts formed stiff hoops of

colour under which appeared heavily bandaged legs, very unlike those of any European ballet-girl. Each separate dance had its meaning, symbolising some struggle between the powers of Nature, in which the friends and enemies of man fight with varying fortunes for the mastery. One 'pas de fascination' was said to represent the efforts of the demons of Kangchenjunga and Chomo-kankar to gain the affections of the fair spirits of the lakes and groves.

The stage was suitable, if almost too sublime, for such a performance. We sat on a bench on the broad paved platform in front of the Gumpa. Groups of acolytes clad in yellow togas gathered on the temple steps and precincts; eager children, summoned for the sight, clustered and gambolled in the background. At last the spangled curtain draped across the door of the heavy portico was drawn aside, and a masked figure appeared pirouetting fantastically backwards down the steep flight of steps to the platform. Eight or nine more followed; masks green and blue and red; masks terrible and comic, representing devils and boobies, monsters real and unreal. There was a different set for each dance. One might weary of the fantastic gambols, the ceaseless waving of arms, and the figures that repeated themselves in the circling pursuits that were perpetually renewed. But it was impossible to have enough of the whole scene and its natural surroundings. The aged abbot in his mitre at the head of the stairs suggested the High Priest in Tintoretto's 'Presentation of the Virgin' in the Madonna del Orto at Venice; the neophytes in their classical attire might have served for a study by Alma Tadema.

Beyond and enclosing all these incidents of the foreground, these stage effects, was the theatre itself, a landscape such as those who have not visited the Himalaya

can hardly imagine even in a dream ; a marvellous expression of space, light, colour ; an example of Nature at once luxurious and sublime.

Round about and beneath us were spread the green waves of the nearer forest ridges ; as the distance grew, the hills turned into piles of vague, exquisite aërial colours, mauves and blues and pinks and purples ; far away in one direction lay a stretch of golden plain ; in the other towered the snowy range, its peaks shining in the sun above the still brighter mists that nestled in the hollows between them. Overhead the vault was of a brilliant light blue, and across it sailed and circled two great eagles, driving the fluttered green parrots to scream in closer circles among the tree-tops we looked down upon. The atmosphere was transfused with light, and the earth robed in transparent colours. I was torn between intense enjoyment of the moment and regret that memory would retain so imperfect a picture of the transcendent beauty of the landscape.

The Sikkim authorities have made good the pony track from Pamionchi through Rinchenpong to Darjiling. It is an affair of four stages, sixty miles in all, and can be ridden very comfortably in two days. Like every road in this region it is a succession of steep hills. There is a descent of 5000 feet from Pamionchi to the junction of the Rangit and the Kulhait, then two high ridges, with a valley between, have to be crossed, and the last climb up from the Rangit to Darjiling is no less than 6000 feet. Such hills, however, are nothing to Sikkim ponies. Mine, the property of a Kazi, or village chief, was a most spirited little beast, with a perfect knowledge of the road and a passion for short cuts, which it took quite regardless of their angle. There is not a dull mile in the whole ride, and there is constant change of scene between the tropical glories of plantains and palms in the narrow river valleys



THE TEMPLE DOOR, PAMIONCHI.

and the broad cultivated uplands, whence the eyes range freely over hill and dale. The country left on me an impression different from that produced by the region east of the Teesta. There we had felt in a wilderness where Nature reigns supreme and man is but a rare and recent intruder. The country we were now riding through bore signs of having been long inhabited and cultivated. On the open shoulder of the hill of Pamionchi we passed a collection of houses almost amounting to a village, and a few roadside shops dignified by the name of 'bazaar.' Next came a steep plunge down to the wooded watersmeet of the Rangit and the Kulhait, followed by a long but agreeable uphill ride through fields of millet and Indian corn. We lunched at the bungalow of Rinchenpong, whence there is a noble view of the snows. A long terrace path running west brought us to the beautifully wooded gap which leads into the next hollow of the hills. Up and down and side and slant we rode, till as evening approached we crossed yet another glen, and breasting a last ascent found ourselves at the bungalow of Chakang (5190 feet), perched on the very crest of a ridge, looking down on the valley of the Rammum, on the opposite side of which was Darjiling. The floor of the bungalow was full of dangerous crevasses, and most of its contents were badly damaged. But we were too near the end of our journey to be very critical.

The first few hours of our last ride were delightful. The track ran high along the hills among avenues of gigantic bamboos which framed glorious views, a 'wide aërial landscape' of which the snows were the crowning glory. We saw it first in the pure brilliancy of morning sunshine; presently the clouds rose once again in white columns from a thousand hollows, and threw their pale shadows across the forests and foothills.

We lunched beside the Rammum among the ruins of suspension-bridges and a native bazaar, many of the occupants of which had been drowned in the floods of the 24th of September. Then we forded the Little Rangit and rode up the long last 6000 feet ascent through endless tea-gardens, scored by the torrential rains and earthslips, where, nevertheless, scores of cheerful labourers were at work; through native hamlets and past suburban barracks, until at last civilisation met us in the form of a broad high-road, deep gaps in which again bore witness to the force of the waters on that terrible September Sunday night.

One more canter, and I found myself, thanks to my excellent pony, a little ahead of my companions, on 'the Mall.' A respectable Babu addressed me—

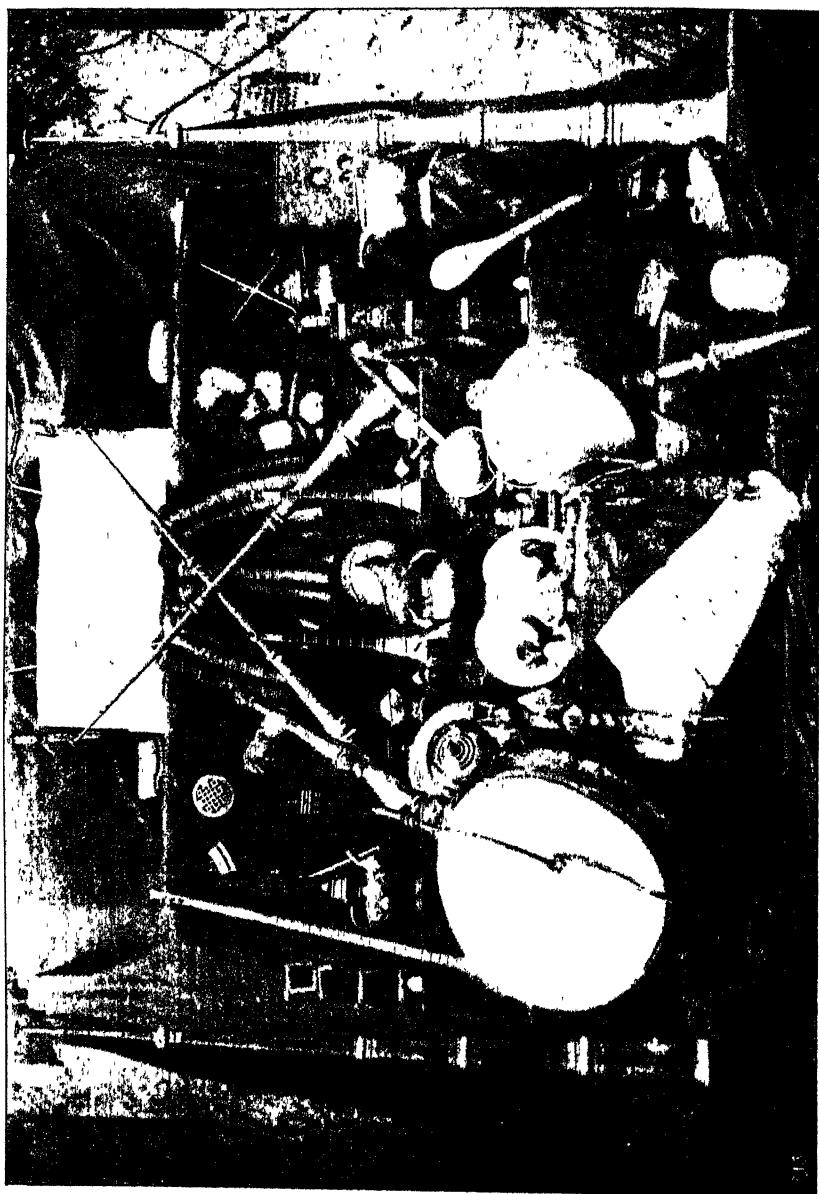
'Pardon me, sir, taking liberty, but are you one of the party from the Snows? Looking at appearances, I presume it probable.' When I informed him that he was not mistaken in the inference he drew from my burnt face, blistered lips, and generally battered appearance, he responded, with the remark, 'What courage, above all at your advanced years!' Highly flattered, I pushed on, and a few minutes later alighted before the hospitable door from which we had started for the Tour of Kangchenjunga, and found myself welcomed, an incongruous object, at an elegant tea-table.

Our journey was over; it had occupied in all seven weeks, during which we had ascended and descended some 75,000 feet, or fourteen vertical miles up, and as many down. Between Lachen and Khunza we had been twenty-four days without meeting any human beings, and twenty days without seeing a tree.

We had returned once more to civilisation. But we had still to bid farewell to the mountains. The shrine on

Observatory Hill was gay with the fresh prayer-flags raised during the Puja or Day of Humiliation that had been held after the great storm to propitiate the God of Kangchenjunga and expiate the insult that had enraged him. What that insult was, whether certain military manœuvres in which guns had been fired on a particularly sacred High Place close to Darjiling, or our intrusion into the Abode of Deity, was, we were told, a matter on which native opinion was much divided.

Fortunately there seemed to be good grounds for believing that the breezes had wafted the prayers of the faithful to the right quarter. Kangchenjunga was in the best of tempers. Every morning the great mountain, calm and radiant, greeted at sunrise his worshippers, and, if its summit was withdrawn for a few hours behind the midday vapours, it was sure to reappear after sunset when the veil of twilight had already spread over the lower hills, glowing like a beacon-light set on the verge of another and less material world.



TIBETAN CURIOS.

CHAPTER XIII

TIBETAN CURIOS¹

DURING my stay in Little Tibet, one of my chief interests was the endeavour to make a really representative collection of Tibetan curios—no easy task nowadays—yet one in which I think I was fairly successful, owing mainly to the help I received from a dignitary of the Buddhist Church known as the 'Skushok' of Spittok. With this distinguished reincarnation, whom I knew and liked better than any of my other Lama acquaintance, I had many long conversations, and he fully realised the true interest I took in his religion and all appertaining to it. As a practical proof of his sympathy he used his influence and authority to make my collection as perfect as possible. This valuable assistance had the most fortunate results for me, and I acknowledge it very gratefully. He would not hear of selling anything to me, protesting both that it was

¹ The following chapter is kindly contributed by Mrs. Le Mesurier. Her collection of Tibetan curios was, it is true, for the most part made in Ladakh, beyond Kashmir, at the other end of Tibet. But they are entirely similar in character, if not always in detail, to those met with in the Sikhim temples, and I believe many readers will be interested to know something more than I have been able to tell them about these strange religious objects. I may add that I obtained at Pamionchi some temple banners made after the fashion of Japanese Kaka-muni. One of them is of great antiquity and interest, and contains a landscape map showing many mountains, hermitages, and saints—as well as divine apparitions. Darjiling, of course, is full of traders in more or less spurious antiquities.

The picture of Potala, the fortress palace of the Dalai Lama at Lhusa, in Mrs. Le Mesurier's collection, corresponds closely with that brought back a year or two ago by the Nepalese Embassy that carries gifts to the Tibetan capital, a copy of which is deposited at the Royal Geographical Society's, 1 Savile Row, W.

against his principles, and also that our dealings were a matter of friendship, not of business. But of course I saw that the monasteries were no losers and that they received a donation of equal value (in so far as such things can be valued) to the treasures they parted with. Some monasteries preferred, in the case of objects that could be copied in Ladakh, that I should replace what they gave me with modern replicas, as the age of an article appeared in no way to enhance its value in their eyes. Truly it was a case of new lamps for old, in which I profited as much as the magician of the *Arabian Nights*.

On my return to Srinagar, Mr. Geoffrey Millais, who is a past-master of photographic art, and whose exquisite views of Kashmir should be even better known than they are, very kindly took a picture of my collection. This was no easy undertaking, as any one who has attempted to photograph a large group of inanimate objects knows well. The difficulties of arranging them so that one shall not mask the other, so that the full value of detail be obtained, and yet so as to make an artistic whole, are very great, but Mr. Millais' great experience and taste triumphed over all, and the result was a signal success, to which the greatly diminished scale on which it can be reproduced here can only do very partial justice.

My Tibetan collection consists of two parts: namely, the paraphernalia of the Gumpas,¹ objects actually used in religious rites and services, and other articles, which, though in many cases used by the Lamas, are not themselves of a sacred character. The first group, perhaps, has the greater interest, though the palm for artistic beauty of design would be hard to award between them. The priestly instruments must however take precedence, and domestic utensils follow in the second place.

¹ Lama monasteries.

First come the pair of 'Dhung-Chhen'—huge copper trumpets eight feet long, which flank and frame the photograph. The round ringlike pieces of metal which ornament them are of most finely chased brass-work, and the trumpets are telescopic, made in five pieces which slip one within the other. These Dhung-Chhen are sounded in the small hours of the morning to summon the Lamas to the early rites in the Du-khang, or worship-chamber of the Gumpa. Besides the performer a third and sometimes a fourth man are required to support the weight of the Dhung-Chhen.

The trumpets or horns called Ra-dung, crossed in the middle of the picture, are similar in design, but, as shown, considerably smaller, the rich decorative work on them is of silver.

The smaller trumpets standing immediately below are of wood and silver and are called Gyaling. They are more properly described as cornets or flutes, for they have holes and stops, and different distinct notes are produced on them.

Another curious trumpet, known as Khangdhung, is shown on the right-hand lower tier of the photograph between the 'Mané' stones. It is made of a human thigh bone, and has a piece of human skin sewn tightly round the joint end, while the other end is bound round with a coarse kind of black twine. It is used in certain ceremonial services.

Yet another sort of trumpet is the Dhung-kar, or white conch shell, lying between the Ra-dung and Gyaling. A more elaborate form of the Dhung-kar, not shown in this picture, is known as the Yai-khyil Dhung-kar, when the conch shell is finished with a metal whorl curving to the side, and is used as a calling horn. This variety, of which I possess a fine example, is difficult to obtain, as they are rare and only to be found in rich monasteries.

The Skang-ling, only used in minor ceremonies, or as a preliminary summons by the heralds in more important functions, is a small trumpet, made of silver or brass, with a head shaped like a dragon.

On the right and left of the front low tier are two large drums with long pointed handles, called N'gá, the frames and handles being of wood painted in once gaudy but now faded colours, and the sides of antelope skin. The curious curved drumsticks are unlike any I have seen in other lands. The larger of the two N'gá measures two feet in diameter across the surface of the actual drum, and four feet six inches taken to the tip of the handle.

The central object in the picture is the pair of cymbals called Si-nyen. These are not of brass, but of fine bell metal, with a peculiarly tuneful sound, and are only made in China. They are extremely brittle, and are provided with a piece of fitted felt to safeguard them when carried. They are held in the hands by leather loops.

At either side of the cymbals and to the front of them are two Damarus, or small drums. The one to the left is a perfect example of the true Damaru. That is to say, it is formed of two human skull-tops fastened back to back, and the drum sides are covered with fish-skin. A long streamer of handsome Chinese brocade—for which bunches of human hair are said to be sometimes substituted—hangs from it, and two small tassels are suspended in such a way that a peculiar motion of the hand makes them act as drumsticks. The skulls are bound together with a ring of silver ornamented with blue and red stones. The sound produced by a skilful performer on the Damaru resembles a quick double tattoo, and is supposed to avert the evil eye and other untoward influences. The Damaru at the opposite side is only an imitation used by the poorer monasteries, and is composed of wood

shaped to resemble a skull and faced with ordinary leather.

On the same table, but in an unfavourable position, is the Dorjé, a brass implement a few inches long, supposed to represent a thunderbolt. This may recall Zeus and the Greek mythology. The priest grasps it in one hand during certain religious ceremonies, while in the other he holds the Lhasa bell, or Dhilbu as its proper name is, which is pictured to the right of the cymbals and immediately behind them. This bell, which is very sweet-toned, and, like the Dorjé, only manufactured in Lhasa, is engraved with the usual mystical phrase: '*Om mané padmé hum.*' This is also to be found on the various Mané stones, of which several specimens will be noticed in different parts of the photograph. Needless to say, all the work, whether in stone, metal, or wood, is entirely done by hand; machine-made articles are unknown in Tibet. It is a most interesting sight to watch a local smith hammering a soft sheet of copper into various intricate shapes and adorning them with fine carving with apparent carelessness and only an occasional glance at his copy.

Next to the white conch shell is the Mané Khorlo, better known in Europe as a Tibetan prayer-wheel or cylinder. This example, which is for use in the hand, is light and portable, made of copper, inlaid with brass and silver, and the merest touch causes it to revolve rapidly from right to left. Inside the prayers are wound closely round the axle, and if caused to go the wrong circuit, i.e. from left to right, the effect is that of a black paternoster. The larger Khorlos, some of which are enormous barrels, are fixed on pivots. Those which are turned by running water are named Chhu-khor—chhu being the Tibetan word for water. A Mani Lhakhang is a structure built separately for the protection of a quantity of prayer-cylinders.

The Pur-bhus, which are very small, are scarcely perceptible in the illustration. They are ornamental daggers with a three-sided blade, and are used by the priests in rites directed against evil spirits. I possess three—one of carved wood, which can just be seen on the second tier to the right, one of common iron, such as is generally used by the poorer Lamas of Little Tibet, and one of handsomely worked iron with an elaborate design of death's heads on the handle, said to have been brought from Lhasa. The use of skulls and death's heads in the exorcism of demons is a common feature of Tibetan priestcraft, many of the masks used in the devil dances being ornamented with these ghastly objects.

The Pokhsporh, not figured in the plate, is a censer, made of silver or copper, with the lid handsomely wrought in pierced open-work so as to emit the fumes. It is swung in the hand by treble chains.

We now come to the Puja-dāns, or worshipping-pots, as the word literally means—otherwise libation bowls, or flagons for holy water. Of these there are three different varieties in my collection. Directly to the left of the Gyaling (cornets) stands the 'Chhö-kyok,' made in three pieces. The main bowl is an exact imitation of a skull, and is sometimes a skull itself. The stand on which it rests is moulded in a design of grinning death's heads, and the silvered cover is adorned with the Dorje pattern top. Beside this bowl a small vase may be noticed, which is really a lamp called Marmé. Filled with ghee, in which a burning wick floats, these lamps are used in large numbers as an oblation before all images of deity. On the tier below is another Puja-dān, for which I know no special name, but its graceful shape is very frequently seen in the monasteries, both in Sikkim and Ladakh. It is of copper, with a slight silver rim round the neck, and resembles a small

coffee-pot more than anything else. The third Puja-dān, low down on the right, beside the giant trumpet, is one of the class known as Bumpa, and I believe this particular variety to be the Té-bum. It has a curious turned-back brim with a hole in the top for peacocks' feathers, but no lid, and when I got it, it was wrapped in a bit of dirty red 'nabsa' (holy clothing), which is, I believe, characteristic of the Té-bum.

The shrine-box at the right-hand side of the photograph on the highest tier but one is of great age, made of wood, painted dark red, and gilded. The likeness of the saint within is, however, only a copy of the original picture, this being one of the cases where the Lamas would certainly have scrupled to part with the original.

The only objects remaining to be noticed among the religious part of the collection are the 'Tszé-tszé' or seals, scattered about the picture; small white objects modelled in the form of Chortens and shrines, or with a human figure or god in bas-relief. These 'potted Lamas,' as they have been irreverently called, are moulded from the first bone which falls from a cremated body, ground up and blended with white clay. They are then deposited in the sanctuary of some Gumpa, or in less distinguished cases in any of the Chortens by the wayside.

At the top of the photograph is a picture map of the Dalai Lama's palace and monastery in the sacred city of Lhasa. This is an accurate copy made by a Lama from one brought from Lhasa by my friend the Spittok Skushok, and I compared it carefully with the original. When presenting it to me he expatiated on the enormous size of the Gumpas of Lhasa, compared to which all the monasteries of Little Tibet, including Hemis, which is by far the largest, were as nothing. As to their magnificence he waxed enthusiastic, and said that where the Ladakh convents used

brass and copper, those of Lhasa used silver and gold inlaid with precious stones. I tried to ascertain from him the bearings of the map. He said the sun rose on the right-hand top corner, that the town (bazaars) of Lhasa stretched for miles away to the right-hand bottom corner, and that the square indicated below the actual house of the Dalai Lama was the usual promenade of the many thousand Lamas residing within the monastery walls. He added that the surrounding country was thickly strewn with Gumpas, and that the one in which he was educated was several miles from Lhasa proper. He told me he had passed all the successive examinations of Lamaism, and had attained the highest grade. The drawback to this distinguished position was that he frankly avowed himself unable to revisit Lhasa, much as he would wish to do so, as he was a comparatively poor man and could not afford to entertain the other Lamas and make donations to the monasteries on the scale which would be imperatively necessary for an ecclesiastic of his status.

The rolled-up map at the bottom of the photograph is of Hemis, where the celebrated mystery play is yearly performed.

We may now turn to the secular side. There are three Tibetan teapots in the collection, all of copper with brazen adornments. That to the left is a very handsome example, but comparatively modern, as is also the one to the right, to which, however, a personal interest attaches, as being a gift to me from the boy hermit of Hemis. But the gem of the collection is the open, unlidded large teapot in the very centre of the picture, which is extremely old. It comes from the Spittok Gumpa, where it was still in daily use, and was indeed full of rank Tibetan tea at the time of its passing into my possession. The shape of the upper part, resembling a mitre, is closely copied from the Lama cap,

and round the brim runs an inscription in the Tibetan tongue, signifying the name of the first owner and of his convent. With its double handle, curved spout, and blending of metal, it is a beautiful thing.

In front of this and of the cymbals, is a Chinese Tibetan teacup, being a small round china bowl without any handle, on a stand and with a chased cover of a metal resembling pewter. I acquired this not in Ladakh but Sikkim, as also the Lama's hat and turquoise charm-boxes which will be noticed further on.

To the right of the mitre-cap teapot is a large copper and iron spoon or ladle, used by the Lamas to serve out tea or broth from the huge vessels in which they are prepared. This spoon, which has a long wooden handle, was in use at Tiksé Gumpa.

Still further to the right is a tea-churn, in which the mixture of tea, salt, soda, spices, etc., is compounded. It is made of a hollow piece of wood, nearly black with age, and bound round with fluted rims of brass. To the extreme left is a vessel similarly made of wood and brass, but with a brass and copper handle, and of a different shape to the tea-churn. This is a 'Chang-pot' or flagon for the local native beer. It was used by a long dead Lama of Hemis, and I found it half buried in dirt and dust in the Hemis Tosha-Khana (treasure-chamber). Thence also I unearthed the quaint brazen Chang jug with its copper handle and curious elongated lip which can be seen on the right centre of the group. A noticeable point of this and all very ancient Tibetan vessels is their extraordinary lightness relative to their size.

The two stringed instruments resembling lyres, or embryo banjos, are commonly used by the laity, and come from Yarkand, where they are purchased for a few pence. I have also frequently seen them in the Kashmir bazaars.

They are strung with metal wire, and produce a shallow tinkling sound.

To the right of the Lhasa map is an ordinary Ladakhi whip, the wooden handle set in silver and copper, and a double thong of leather for a lash. It is more like a European dog than horse whip, but is highly efficacious on a recalcitrant Yarkandi pony. On the wall above are two of the brass and copper pipes commonly used by all Ladakhis, with long, slender stem and tiny bowl.

On either side of the Lhasa map hang portions of a Tibetan woman's waist chain, made of brass, while to the left of it and below, two articles hang on the wall—one a round piece of open brass work worn in the front of the dress as an ornament by the Ladakhi women, with a sort of leather and metal chatelaine dangling from it, to which are often attached spoons, knives, and other implements. The other is a man's leather belt on which are carried a Chinese pen-case of chased metal, a flint and tinder box of red leather handsomely ornamented with brass, and an inkpot-case. The inkpot itself, which does not show, is an exquisite oval of copper, richly worked in silver. At the foot of the picture are a pair of Lhasa boots, the soles of thick layers of felt, the uppers of scarlet and emerald green cloth.

Tibetan spoons, made either of brass or silver, according to the means of the owners, and decorated with a turquoise in the centre of the stem, have nearly all the peculiarity of a double bowl, one at each end of the handle, generally a large and a small to serve for different uses. Usually, too, there is a small metal ring or loop attached to the back, so as to enable them to be swung from the chatelaine. The handsomest set I have seen I got in Sikkim.

The Ladakhi women's necklaces, of which I obtained some good specimens, are of coral beads alternating with

pierced silver pendants, and are very effective. They are not shown in the photograph.

The Lama hat to the left of the cymbals is of beautiful gold-coloured Chinese papier-maché, as light as a feather, worked in an intricate pattern, and with a large coral bead as a topknot.

The little charm-box in the very front of the picture is of silver, so closely studded with rough-cut turquoises, that only the blue is visible. This comes from Lhasa, and is the so-called Lhasa shape. The other charm-box, suspended from the tea-churn by its chain of coral and turquoise, is of a completely different rounded shape, which I have only found in Sikhim.

The last but not least interesting object in the collection is the suit of armour, consisting of the coat of mail, the helmet, the leg and thigh piece, and a portion of the arm piece. It is difficult to speak with any certainty as to their antecedents. They were discovered in the old fort at Leh, and are supposed to have belonged to a Tibetan warrior, and to have been left there after one of the Tibetan invasions. The resemblance to the chain armour of our own crusading ancestors is very remarkable, but I have no theory to advance as to this, nor as to the meaning of the three fish which decorate what appears to be part of the arm piece, whether they were the 'family arms' of the wearer, or of some more general significance, or purely decorative. I know of nothing in Tibetan mythology which accounts for their appearance. It would be interesting to learn the opinions of experts. The armour is a beautiful piece of work, in excellent repair, but so enormously heavy that it is inconceivable how any warrior could have worn it in battle.

This account of the curios of Tibet in no way purports to be an exhaustive list, and pretends to no erudite explana-

tion of their symbolism. It is a plain description of such instruments and utensils or ornaments as have passed into my possession, and of their uses in so far as I am acquainted with them. In the spelling of native words I have implicitly followed Mr. Sandberg's *Handbook of Colloquial Tibetan*, as I found that it was extraordinarily accurate euphonically, and that whenever I quoted from it verbatim, I was always understood of the people.

LIST OF APPENDICES

APPENDIX A

	PAGE
THE GEOLOGICAL STRUCTURE AND PHYSICAL FEATURES OF SIKHIM. BY PROFESSOR E. J. GARWOOD, M.A., F.G.S.,	275

APPENDIX B

NOTES ON THE MAPS. BY PROFESSOR E. J. GARWOOD,	300
--	-----

APPENDIX C

THE NARRATIVES OF THE PUNDITS,	308
--------------------------------	-----

APPENDIX D

THE NATIVE NAMES OF THE HIGHEST MEASURED PEAK. BY THE AUTHOR,	354
--	-----

APPENDIX E

LIST OF BOOKS AND MAPS CONSULTED,	359
-----------------------------------	-----

APPENDIX F

LIST OF PHOTOGRAPHS TAKEN BY SIGNOR V. SELLA DURING THE TOUR OF KANGCHENJUNGA,	364
---	-----

APPENDIX A

THE GEOLOGICAL STRUCTURE AND PHYSICAL FEATURES OF SIKHIM

By E. J. GARWOOD, M.A., F.G.S.

THE geological structure of Independent Sikhim, viewed from a broad standpoint, seems at first sight remarkably simple, and it is possible a fossil collector, mineralogist, or mining engineer might add 'singularly uninteresting.' It consists entirely of crystalline and metamorphic rocks, and these too, for the greater part, of a uniform and commonplace type.

But to the physical geographer and petrologist, the country is rich in suggestive facts, while theoretical problems of the greatest general interest force themselves on the traveller at every turn, most or all of which cannot be answered until a much more detailed survey of the country has been accomplished.

Our information regarding the detailed structure of Independent Sikhim is so far of the scantiest description. This is due to several circumstances. In the first place, not being a portion of British India, it does not fall within the sphere of influence of the Geological Survey of India, and, though scattered observations occur in the pages of the "Memoirs" and "Records" of that body, the number of geologists who have penetrated any distance into the country may be counted on the fingers of one hand. Again, the country is decidedly difficult of access, and being for the most part covered with dense forests, sections of the solid rock are few and far between.

In the present chapter I shall endeavour to bring together all the scattered information hitherto obtained, with such observations as I was able to make in the few weeks we spent in the north-west portion of the country and the neighbouring district of Eastern Nepal.

The earliest geological observations on the country are those published in Sir Joseph Hooker's justly famous *Himalayan Journals*. In these, the record of two years' travel in Sikhim, he

makes many scattered references to the dip of the gneiss, the character of the scenery and proofs of the former extension of the glaciers throughout the country. We may divide his observations into three series. First, those obtained during his unique visit to Wallanchoon and Eastern Nepal. Secondly, those made during his journey to Jongri. And lastly, the observations recorded during his prolonged sojourn in N.E. Sikhim and the Cholamo Lake district before his capture and detention with Dr. Campbell by the Dewan.

The results of the first expedition prove that the crystalline rocks of the Kangbachen Valley, which we visited, continue westward as far as Hooker penetrated in Eastern Nepal. His observations on the well-marked moraines in the Yangma and Khunza Valleys prove the former much greater extension of the glaciers on the west of the watershed, as well as on the east, down to 8000 feet. These moraines are well shown in several of his sketches of the district. Again in his view of the Chunjerma Pass, plate v. p. 264, he shows the horizontal appearance of the rocks forming the summit of Jannu, and remarks, 'Its rocks above 20,000 feet, like those of Kenchinjunga, being of white granite, and not contrasting with the snow. Whether the top is stratified or not I cannot tell, but wavy, parallel lines are very conspicuous near it.'

In commenting on the terraced spurs seen in the valley in the neighbourhood of Lincham on his return from this expedition, he calls attention to the uniform slope of their upper portion and their sudden abrupt descent on approaching the sides of the present valleys, which he attributes, as was customary at the time, to marine action taking place during intervals of rest between periods of elevation and submergence. These are, however, without doubt old plains since dissected by rivers as a result of renewed elevation as I have suggested below. They are, in fact, overdeepened valleys.

During his second journey to Jongri Hooker made many observations on the dip of the gneiss and mica schists, establishing the general westerly and north-westerly dip of the beds in the Pamionchi district and the valley of the Rathong. Although he was prevented by bad weather from penetrating beyond Jongri, his observations on a distant view of Pandim are remarkably shrewd. He recognises the stratified character of the beds and their alteration by intrusive granite veins. His general views of the structure of the country gathered during this part of his expedition may be best summarised by the following quotation. I have not altered the spelling of local names.

'The upper 10,000 feet of Kinchin, and the tops of Pundim, Kubra, and Junnoo, are evidently of granite, and are rounded in outline:

the lower peaks again, as those of Nursing, etc., present rugged pinnacles of black and red stratified rocks, in many cases resting on white granite, to which they present a remarkable contrast. The general appearance was as if Kinchin and the whole mass of mountains clustered around it had been upheaved by white granite, which still forms the loftiest summits, and has raised the black stratified rocks in some places to 20,000 feet in numerous peaks and ridges. One range presented on every summit a cap of black stratified rocks of uniform inclination and dip, striking north-west, with precipitous faces to the south-west: this was clear to the naked eye, and more evident with the telescope, the range in question being only fifteen miles distant, running between Pundim and Nursing. The fact of the granite forming the greatest elevation must not be hastily attributed to that igneous rock having burst through the stratified, and being protruded beyond the latter: it is much more probable that the upheaval of the granite took place at a vast depth, and beneath an enormous pressure of stratified rocks and perhaps of the ocean; since which period the elevation of the whole mountain chain, and the denudation of the stratified rocks, has been slowly proceeding.

‘To what extent denudation has thus lowered the peaks we dare scarcely form a conjecture; but considering the number and variety of the beds which in some places overlie the gneiss and granite, we may reasonably conclude that many thousand feet have been removed.

‘It is further assumable that the stratified rocks originally took the forms of great domes or arches. The prevailing north-west strike throughout the Himalaya vaguely indicates a general primary arrangement of the curves into waves, whose crests run north-west and south-east; an arrangement which no minor or posterior forces have wholly disturbed, though they have produced endless dislocations, and especially a want of uniformity in the amount and direction of the dip. Whether the loftiest waves were the result of one great convulsion, or of a long-continued succession of small ones, the effect would be the same, namely, that the strata over those points at which the granite penetrated the highest would be the most dislocated and the most exposed to wear during denudation.’

In his journey to North-East Sikhim Hooker was able during his prolonged sojourn in the Lachung Valley to gain a very fair idea of the general character and dip of the rocks of that region. With the exception of the gneiss immediately to the south-west and north-east of Momay Samdong and on the Donkhyia peak, the dip of the crystalline rocks is uniformly to the north-east, over the whole

district drained by the Lachung as far as the Donkhyia Pass, and the Lachen to its origin in the Cholamo Lake. It was during this journey, too, that he met with the only sedimentary rocks hitherto recorded from this region, which he thus describes:—

‘We visited some black rocks which rose from the flats to the east of the lake. They proved to be of fossiliferous limestone, the strata of which were much disturbed: the strike appeared in one part north-west, and the dip north-east 45° : a large fault passed east by north through the cliff, and it was further cleft by joints running northwards. The cliff was not 100 yards long, and was about 70 thick; its surface was shivered by frost into cubical masses, and glacial boulders of gneiss lay on the top. The limestone rock was chiefly a blue pisolite conglomerate, with veins and crystals of white carbonate of lime, seams of shale, and iron pyrites. A part was compact and blue, very crystalline, and full of encrinitic fossils, and probably nummulites, but all were too much altered for determination.’ I will defer comment on these rocks until I describe similar rocks which we met with in the north-west of Sikkim.

In the neighbourhood of the Cho La his observations must have been considerably curtailed by his forced detention; he records, however, the general north-easterly dip of the gneiss in the Dik Chu Valley and its horizontal character on the Tibetan watershed. Among other observations of a more economic character are those on the lakes and hot springs in the Phalung district and the occurrence of plumbago in occasional pure pieces in the gneiss and tourmaline granite of Zemu Samdong, a mineral which also occurs sparingly in the Darjiling gneiss and was collected by Captain Sherwill from the neighbourhood of Kursiong. His observations on old moraines and glaciated surfaces are best reserved for a general consideration of the glaciation of Sikkim. The volumes abound throughout with shrewd comments on all he observed, and the thorough character of his observations is testified to by the fact that, since his Journal was written, no additions to our knowledge of any importance have been made by subsequent observers in the districts which he visited.

In 1852 Captain W. Sherwill, revenue surveyor, made a tour along the Singalela ridge to the Gamothang lake district, with the express intention of ascertaining the geological formation of the range. The immediate object of the expedition was to study the section of the south-west face of the mountain recently exposed, in May of that year, by an earthquake ‘which threw down several thousand square yards of the south-west face of the perpetually snow-covered mountain Kunchinjinga, exposing a dark mass of rock.’

From the appearance thus presented, when seen through a telescope from Darjiling, the author concluded that the rock was of a highly stratified nature and not granite, as previously stated by Sir Joseph Hooker in a botanical magazine.

The survey was made by way of the Kulhait River and the so-called Singalela ridge on the supposition that this ridge conducted directly to the foot of Kangchenjunga, as suggested in Hooker's map. Finding himself, however, apparently cut off from the foot of Kabru by the deep gorges of the Rathong Chu and its tributaries, he returned by Pamionchi to Darjiling. The geological results of this expedition were embodied in a reproduction of Hooker's map. Although no further information was obtained regarding the detailed structure of the Kangchenjunga massif, a number of useful observations were made along the Singalela ridge, proving the continuous crystalline character of the rocks between Darjiling and Jongri.

The next expedition in this district took place in 1856, when Hermann Schlagintweit, in charge of the Magnetic Survey of India, visited Darjiling and proceeded to Phallut. Here he was stopped by a Nepalese guard and obliged to return to Darjiling. His geological observations were evidently considered of secondary importance, and no details concerning them are published in his report, in which he contents himself with the naive remark: 'In Sikhim all the rocks are crystalline and metamorphic without limits so well defined as to enable me to distinguish them in a geological map.' This candid statement, as true to-day as it was in 1856, is the real reason of the absence of any geological map of Sikhim, worthy of the name, at the present day. The further statement, however, of the same author that 'the cleavage has a predominant dip to north 45° east, and is generally steep' is of purely local application.

Five years later, in 1861, Major Sherwill, with three friends, reached the Guicha La for the first time, travelling *via* Pamionchi, Yoksun, and Jongri. They ascended the Kabur ridge to a height described as 16,500 feet, this being, perhaps, on the flanks of the 'forked peak' of our map. With the exception of a few stray allusions to gneiss or mica schist, seen on the way, the chief geological notes of importance refer to the rocks forming the western wall of Pandini and the moraines of the Guicha La and Alukthang glaciers. Describing the view from Alukthang, Major Sherwill remarks: 'On the left a dark range of bare, bold, and craggy mountain, 16,000 or 17,000 feet high, capped with snow, having the appearance of basaltic formation, but formed of gneiss, mixed with hornblende and syenite, rose abruptly,' while he describes the moraine at the

foot of Pandim as 'composed of rounded and angular blocks of highly contorted gneiss, intermixed with pieces of syenite, micaceous schists, coarse granite, quartz with tourmaline crystals, white and pink quartz often containing veins of a crystallised felspar, and coarse gravel and debris.' And he further remarks: 'I was able to make a rapid sketch of a vertical section of a precipice on the western shoulder of Pandin, showing its formation to be a gneiss, similar to that found on the glacier, of which I brought away some good specimens.' From this we see that the author had not read Hooker's description, nor recognised for himself the metamorphic character of the beds. Major Sherwill also describes for the first time the three moraine-dammed tarns at the foot of Pandim, and the system of glaciers; he endeavours to estimate the thickness of the ice at the snout of the lowest glacier by boiling-point observations at the base and summit of the ice, giving elevations of 13,760 and 16,060 feet respectively, or a thickness of 2300 feet for this glacier. The lowest figure corresponds with the elevation of the valley at our camping-ground near this spot, but his determination of 18,500 feet for the Guicha La, or 2000 feet higher than that now usually adopted, seems to throw some doubt on the accuracy of his determinations. Of Kangchenjunga he remarks: 'Its formation is probably of gneiss not of a contorted type, and which has a dip of 20° to 25° to the east.' No specimens, however, appear to have been collected *in situ* from this district, nor any observations made with regard to the field relations to one another of the various rocks mentioned.

In 1870 Dr. Blanford and Captain Elwes made a journey to the eastern and northern frontiers of Sikkim. This expedition was made with a view of studying the fauna of the Alpine portion of Sikkim, but Dr. Blanford also records a few geological observations. On the Jelep La the rocks are described as very felspathic pale-coloured gneiss, the foliation having a general but varying dip to the eastward. 'The dip is N. 10° E. about 20° , and usually on the crest of the range the angle of inclination is very low. Near the Yak La it is in places quite horizontal.' After calling attention to a similar horizontality of the gneiss on the Singalela ranges, he remarks:

Curiously enough, the remarkable horizontal foliation appears only to have been observed, both on the Cho-la and Singale-la ranges, upon the very crest of the dividing ridge.' The Bidang Cho Lake and others close by are described as moraine-dammed sheets of water, with the exception of a small rock-basin which Dr. Blanford suggests may have been excavated by the ice of a small glacier, when the snow-line extended but a short distance below the peak and the glacier was just sufficiently long to hollow out the rock-

basin in which it rested. In this suggestion we have an anticipation of Dr. Penck's 'Zungen-becke' of the Alps.

In another portion of this narrative the rocks in the Teesta Valley above Chakung are described as dipping at a very high angle, and I find records in my notebook of gneiss in this neighbourhood dipping at angles of 50°-60° east-north-east. As the Lachung Valley is ascended this dip decreases, till just below the village of Momay Samdong it is practically horizontal, while in the hills to the westward it dips to the south and south-west, at an angle rarely exceeding 10°-20°. The gneiss is in places granitoid, and often traversed by granite veins; both gneiss and granite consist chiefly of white felspar with but little quartz and black mica. It was most unfortunate that Dr. Blanford was prevented by the Tibetan guard from crossing the Doukhyu La and visiting the fossiliferous limestone described by Hooker from the Cholamo Lake.

In 1874 we have the first official description of the rocks forming the Darjiling district. This is embodied in a report by F. R. Mallet in the *Memoirs of the Geological Survey of India* on the geology and mineral resources of the Darjiling district. The report deals chiefly with the coal-bearing beds outside Sikhim, but contains generalisations of importance. He points out the curiously reversed relation of the gneiss and underlying Daling series, and of the latter to the Damudas sandstones, and remarks that 'the gneiss should be the oldest rock, and either inverted on to the slates, and they in their turn on to the Damudas, or else that the boundaries should be faulted ones, or finally, that the relations of these formations to each other should resemble those of the Tertiaries to the Damudas, as indicated above, is what will naturally suggest itself. Strange as it may appear, however, that such thoroughly metamorphic strata should normally overlie those in a less altered condition, the evidence points to this conclusion.' 'If we followed the ill-marked, and often indefinite, boundary between the slates and gneiss, down the valley of the Tista, and thence back to Karsiang and on to the Mechi, we find that the underlie of the former is a constant feature. The same thing occurs east of the Tista also.'

The author further remarks on the marked lithological change, but general conformity between the Dalings and Damudas. He considers the Dalings to be faulted against the gneiss on the southern boundary near Darjiling and to be newer than the Damudas, for he remarks: 'I have shown that the junction of the Daling beds and the Damudas is a natural one. It follows from this and the above considerations respecting the superposition of the Darjiling gneiss that both it and the Daling beds must be younger than the coal-bearing rocks.'

And he further remarks: 'It is scarcely necessary to add that the Darjiling gneiss must be vastly younger than that of Bengal, which was fully metamorphosed and enormously contorted and denuded before the Damudas were deposited on it.'

The Reports of Chandra Das (1881 and 1885) contain a few scattered geological notes on Eastern Nepal, but the Pundit can hardly be considered as a technically competent observer.

Some years later (1891) Mr. P. N. Bose was deputed on a similar mission¹ to the Teesta Valley, and with the report of this expedition is included a collection of notes on the geology of Sikkim. In these he confirms Mallet's observation that 'wherever the junction between the two groups is observed the Dalings appear to underlie the gneiss; and the fact that the former pass into mica schists at places near the junction makes it appear as if there was a passage from one to the other group.' He distinguishes between the two forms of gneiss found in the north and south of Sikkim. In the southern gneiss both muscovite and biotite occur, the former predominating. Hornblende, garnet, and schorl are the chief accessory minerals. Bands of quartzite are common. Veins of calcite occur at places. The gneiss is well foliated, and exhibits strongly marked features of disturbance, in that it is much folded and crumpled, especially about Darjiling. The northern gneiss he describes as 'not so micaceous.' Muscovite is either rare or is entirely absent, but biotite is abundant. Schorl and hornblende are the chief accessory minerals. Intrusive granitic rocks occur as dykes and sheet; in some of them muscovite is well developed. The prevailing strike is the same as that of the southern gneiss, the general direction of dip being north-eastern. As we shall see presently, this general statement does not apply to the gneiss of the Kangchenjunga massif.

In 1889 Mr. Bose also visited the Jongri and Alukthang district previously described by Major Sherwill. Beyond confirming the notes of previous observers as to the general crystalline character of the rocks, the chief remark of importance which occurs in these notes is the recognition of the igneous character of the principal mass of gneiss. It is curious that he makes no remark concerning the metamorphic character of the beds forming the Pandim precipice, although these were detected by Hooker forty years before when seen from Jongri in January under very trying conditions, and without his being able to approach more closely. The last work on Sikkim to which we need refer is Major Waddell's book. Here we find a few scattered allusions to the rocks met with, but nothing of importance.

The following is a list of the geological literature bearing on the district:—

GEOLOGICAL LITERATURE

1848. Irvine (R. H., M.D).—A few observations on the probable results of a scientific research after metalliferous deposits in the Sub-Himalayan range around Darjiling.
Jour. Asia. Soc. Bengal, vol. xvii. p. 137.

1852. Piddington (H.).—Notice of graphite sent by Capt. Sherwill from Karsiang. *Ibid.*, vol. xxi. p. 538.

1854. Hooker (Sir Joseph).—Himalayan Journals.

1854. Sherwill (Capt. W. S.).—Notes upon a tour in the Sikkim Himalayas along a portion of the western or Nepaul frontier.
Ibid., vol. xxii. pp. 540, 611.

1854. Campbell (A., Dr.), and Piddington (H.).—Correspondence respecting the discovery of copper ore at Pushak, near Darjiling. *Ibid.*, vol. xxiii. p. 206.

1856. Piddington (H.).—Examination and analysis of Dr. Campbell's specimens of copper ore obtained in the neighbourhood of Darjiling. *Ibid.*, vol. xxiii. p. 477.

1856. Schlagintweit (H.).—Geological observations in Sikkim.
Ibid., vol. xxv. p. 22.

1862. Sherwill (Major S. L.).—Journal of a trip undertaken to explore the glaciers of the Kauchanjinga group in the Sikkim Himalayas. *Ibid.*, vol. xxxi. p. 457.

1865. Godwin Austen (Capt. H. H.).—Notes on the sandstone formation, etc., near Baxa Fort, Bhutān Duārs.
Ibid., vol. xxxiv., part II. p. 106.

1868. Godwin Austen (Capt. H. H.).—Notes on the geological features of the country near the foot of hills in the western Bhutān Duārs. *Ibid.*, vol. xxxvii. part II. p. 117.

1871. Blanford (W. T.).—Account of a visit to the eastern and northern frontiers of Sikkim. *Ibid.*, 1871, p. 367.

1874. Mallet (F. R.).—On the geology, etc., of the Darjiling district and the Western Duārs.
Memoirs Geol. Survey India, 1874, vol. xi. part I.

1891. Bose (P. N.).—Extracts from the Journal of a trip to the glaciers of the Kabru, Pandim, etc.
Records Geol. Survey India, vol. xxiv., part I., p. 46.

1891. Bose (P. N.).—Further note on the Darjiling Coal Exploration.
Records Geol. Survey India, vol. xxiv. part iv. p. 212.

1891. Bose (P. N.).—Notes on the Geology and Mineral resources of Sikkim, with Map.
Ibid., p. 217, and *Gazetteer of Sikkim*, p. 57.

1899. Waddell (Major L. A.).—Among the Himalayas. Contains a few geological notes.

1902. Garwood (E. J.).—Notes on a map of the glaciers of Kangchenjunga.
Geographical Journal, July 1902.

1902. Garwood (E. J.).—Hanging Valleys in the Alps and Himalayas.
Quart. Jour. Geol. Soc., vol. lviii. p. 711.

1902. Parkinson (J.).—The petrographical characters of the Darjiling Gneiss.
Geol. Mag., Jan. 1902.

In the above sketch I have endeavoured to bring together the more important facts regarding the geological structure of Sikkim recorded by different travellers up to the date of our expedition. In the pages which follow I have noted such additional observations on the north-west corner of Sikkim as I was able to make during our tour of Kangchenjunga. The district in question is of considerable interest as it fills a blank between the most northerly point hitherto described at the Guicha La and the portion of Eastern Nepal surveyed by Hooker.

The observations made during the earlier portion of our journey from Darjiling, passing by Gantok and Lachen, require but scant notice. Owing to the forest-clad character of the country, but few observations were possible on the rocks *in situ*, and these are embodied on the geological sketch-map accompanying this volume. As far as they go they confirm and supplement the notes made by Hooker on his way to the north-east frontier. From Lachen, however, onwards, until our return to Jongri, we were travelling over new ground from which we have no previously recorded geological observations, with the exception of Hooker's notes on the Chunjerma Pass.

From Lachen the ground traversed is covered by swampy rhododendron forest, but a few exposures of biotite gneiss are seen. In places this contains garnets, and passes locally into a garnetiferous mica schist. This is especially developed about a mile above Lachen, where at the time of our visit, the recent rains had completely destroyed the pony road and exposed a good section of the rock. From here the track to the Zemu Glacier occasionally touched the river bank, exposing boulders of fine grey granite from the old Zemu moraine. The rock *in situ*, however, wherever seen, consisted of the Lachen gneiss. On emerging from the forest more blocks of granite

were seen, and some of these, which we incorporated into a temporary bridge, must have been 20 to 30 feet in diameter, and wonderfully rounded by water action (see page 102). About a mile below the present snout of the glacier occurs a portion of the old moraine forming a high flat-topped embankment, from which the present glacier cannot have long retreated. This was the first of many proofs we met with of the recent retreat of the glaciers in the Kangchenjunga district. The present terminal moraine of the glacier is composed of large blocks of the white granite mentioned above, which appear to be derived from the upper medial moraine, flowing from the central mass of Kangchenjunga. The whole of the lower portion of the glacier is thickly strewn with blocks, the majority of which are of the grey granite. The rocks *in situ* on the right bank near the snout of the glacier are apparently gneiss, striking south-west and north-east and dipping at a very high angle, to all intents vertically. Bad weather prevented any view being obtained of the relation of these rocks to those of Lama Anden; the moraine, however, which we followed along the right bank of the glacier was composed of the same grey granite, and would appear to come from the corner of Siniolchum, where piles of boulders of a similar character occur. Scattered over the ice, where we crossed it opposite the Siniolchum glacier, there occur pegmatite boulders with nests of tourmaline and garnets, together with fragments of a hornblende granite. In all these rocks I specially noted the absence of foliation and the solid, unjointed character of the boulders; there can be no doubt that these are true intrusive rocks. A foliated coarse gneiss does however occur, consisting of very granular quartz, triclinic felspar, and biotite, and containing numerous pale pink garnets.

The former much greater bulk of the Zemu Glacier is attested by the row of old lateral moraines, one within the other, marking the successive stages in the process of ablation. I obtained an excellent view of these from the hillside above our upper camp, where I found myself after a vain pursuit of a flock of burlhel; from here I counted five distinct old lateral moraines, separated from the cliffs by the flat valley, leading to the little Green Lake, along which the rivulet meanders round the delta slopes of the lateral torrents. From this hillside a good view was likewise obtained of the rocks forming the pedestal of the Kangchenjunga ridge. These appear at first sight to be markedly stratified, and to dip gently at an angle of five degrees to the west. The prevalent strike carries them across the glacier to the foot of Simvu, where they sweep round the base of the mountain and away to the cloud gap pass to the south. These beds are well seen in the view opposite p. 108. Unfortunately the

heavy snow which fell during the next two days, and which eventually drove us down the valley, prevented the closer examination of this face of Kangchenjunga which we had intended to make. There can be little doubt, however, from the character of the moraine material streaming down from these ridges, that the pale bands seen in the photograph represent intrusive sills of granite rock, whether the grey granite or the pegmatite it is difficult to say. The rocks into which these sills are intruded consist of biotite gneiss and hornblende schist, which by their appearance in the field resemble a metamorphic series, and differ essentially from the Augen-gneiss to be described presently, from the south and west. It is possible, however, that the apparent dip to the west is not the true dip of the foliation planes, but an optical effect produced by the intrusive sills, and that the real dip may be represented by what appears at first sight to be joint planes sloping to the east. This suspicion is confirmed by the fact that the general trend of the strike on the east side of Simvo is north-east and south-west, with an apparent dip to the south-east; this is also the general direction of the strike of the rocks along the southern watershed of the Zemu Valley, of which we obtained a good view when ascending the Thangchung La. This prevalent direction of the strike, combined with the vertical or highly inclined dip, has resulted in the formation of the remarkable series of north-easterly spurs given off from the southern watershed between Simvu and Lama Anden, and is also indirectly responsible for the tributary glacier basins which occupy what were doubtless softer intercalated bands. This strike was not traceable in the rocks of the Tumrachen Valley, and the ridges being buried in new snow the general bearing of the beds here was unfortunately obscure. On the north side of the Thé La, however, the dip is southerly at angles of 20° to 30° . From the summit of this pass we had a good view over the borders of Tibet to the north, and the change in the character of the scenery was immediately noticeable, though not so striking as the views described from the Kangralama and Donkhyia Passes further north. In place of the jagged and serrated peaks of the Zemu Valley the eye wanders over high undulating ground with a general smooth and rounded appearance. This is due partly to the change in the character of the rock and partly to the recent effects of ice on the softer rock and the covering of morainic material. The summits of the hills to the north and north-east are seen to be capped by outliers of nearly horizontal rock, which no doubt once formed a continuous sheet with the rocks of the Chortenima La which I examined further to the north-west. The rocks forming the Thé La range on which we stood were of quartzose gneiss, dipp-

ing at angles of 20° to 30° to the south; it is therefore more than probable that these horizontal rocks to the north belong to a superimposed series to be presently described. The floors of the Langpo and Lhonak Valleys, which we ascended, were thickly strewn with glacial deposits; in the Lhonak Valley these have been to a large extent rearranged by river action, but huge moraines still stretch across the Langpo Valley a little above its junction with the stream from Goraphu, marking the lower limit of one of the Lhonak Glaciers during a former extension of the ice. When the present retreat of the ice began, lakes collected behind these terminal moraines in both the Langpo and Goraphu Valleys, that in the former having only recently completed its escape. If we may judge by the well-preserved terraces and alluvial floor, it must at one time have extended nearly two miles up the valley. Above this lake, and in the higher part of the valley, the slopes are plastered thickly with drift through which the present rivers have cut deep trenches, leaving flat-topped terraces which form a conspicuous border to the lower slopes of the mountain (page 148). During the period of maximum glaciation, however, the Lhonak Glacier must certainly have spread down the valley to join the Lachen ice and contribute to the two conspicuous moraines which occur about a mile below Lachen Monastery at a height of about 8000 feet.

At the head of the Langpo Chu we met with the most interesting rocks encountered during the expedition; they form a series of ridges descending in a general southerly direction from the Tibetan boundary range in the neighbourhood of the Chortenima La. The beds lie nearly horizontally with a gentle inclination to the north-north-west. They consist of altered limestone, sandstones, and flagstones all much indurated. The two latter are apparently unfossiliferous, the sandstones being converted into quartzites, and being highly ferruginous, weather out a rusty brown colour. The flags where they consist of impure calcareous material have been highly altered by some igneous intrusion and converted into a tourmaline calcite rock, consisting of nearly pure calcite in which are embedded tourmaline needles and rods. Under the microscope the tourmaline is found to be locally very abundant, occurring in pale olive green hexagonal rods; it is very pleochroic and shows the characteristic absorption; it is generally included in the calcite. This latter is white and granular, and the grains are much bent as shown by the cleavage cracks. In some portions of the rock occur cracked grains of quartz which are evidently of clastic origin, while in others sphene, which is universally present, makes up fully an eighth of the slide. Pleochroic mica of a leek-green colour occurs locally, while

yellow garnets and grains of scapolite are not infrequent. Altogether it is a very interesting contact rock.

The most important bed of this series, however, is the fossiliferous limestone, blocks of which occur on the slopes of the twin peaks to the north-east of the Chortenima Pass. This limestone, though recrystallised, has not been so profoundly altered as the more shaly bed described above; how far this is due to the original purity of the limestone and how far to the fact of its outcrop being further removed from the seat of the intrusion, it is impossible to say, as the rock was not found *in situ*. In hand specimens the rock resembles exactly portions of the carboniferous crinoidal limestone altered by the whin sill at Falcon Clints in Upper Teesdale. In appearance it is a light grey rock showing numerous fragmentary crinoid stems. Under the microscope sections of shells and small pealike bodies are also seen, which are undoubtedly of organic origin and resemble brachiopods and foraminifera in outline; they are, however, entirely recrystallised, and it is impossible to speak with certainty as to their real nature: that the crinoid stems have escaped alteration is no doubt due to the fact that their original condition was that of crystalline calcite, whereas the rest of the calcareous material has been converted into that mineral.

The interesting question arises, What is the age of these crinoidal limestones? are they Silurian, Carboniferous, or Eocene? Now there is no occurrence of fossiliferous sedimentary rocks recorded from the Eastern Himalayas, with the sole exception of the outcrop observed by Sir Joseph Hooker in the neighbourhood of the Cholamo Lake, on the north-eastern border of Sikhim, which he describes as 'compact and blue, very crystalline, and full of encrinitic fossils, and probably nummulites, but all were too much altered for determination.' Now, if we omit the nummulites, which are admittedly indeterminable, the rock exactly agrees with that described above, and there can be little doubt that the flat-topped hills in the neighbourhood of Tebli and the Naku La Pass, which we saw from the Thé La belong essentially to the same series, and connect up the beds I have described from the Chortenima district with those near the Cholamo Lake. A careful exploration of the rocks in the neighbourhood of the Tibetan boundary between these points would probably throw much light on this question; it was much to be regretted that our route lay south from this point and prevented any further investigation of these interesting beds in their less altered condition to the north-east and north-west.

The rocks of the Jonsong La ridge, which we crossed in our journey from Lhonak to Kangbachen, consisted of compact biotite

gneiss containing large rounded eyes of orthoclase felspar. The same gneiss also occurs further south, dipping north-west by north. Lower down the Jonsong Glacier the moraines from the north-western tributary contained pegmatites and hornblende schist in addition to the gneiss. Some of the radial nests of tourmaline in these pegmatites exceeded two inches in diameter.

During our descent of the Jonsong Glacier we had a magnificent view of the northern precipices of Kangchenjunga; in their lower portion, at all events, they appear to be formed of massive Augen-gneiss penetrated by pegmatites, these being the only rocks found on the moraines of the Kangchenjunga Glacier. Sometimes the gneiss is finer and contains hornblende, but this mineral is absent from the Kangchenjunga gneiss, and it is probable that the hornblende-bearing variety belongs to a different rock into which the Augen-gneiss is intruded. This gneiss forms the cliffs of the Kangbachen and Khunza valleys, and is recorded by Hooker as occurring also further west in the Yangma Valley as far north as he penetrated. The same rocks again appear to form the massive walls of Jannu, and to stretch south-east to Kabru and the Guicha La.

The general dip of this gneiss in Eastern Nepal is to the east and north-east, and varies in amount from 5° to 45° . Along the northern face of Kangchenjunga it is nearly horizontal with a slight slope to the west. At the corner opposite Pangperma of our map, at the junction of the Jonsong La and the Kangchenjunga Glaciers, the beds appear to turn sharply over to the east in a broken anticlinal fold, so that the Nepal Gap may be the result of a line of faulting or crush. With this exception I met with no undoubted evidence of dislocation throughout our whole tour of the mountain.

The rocks of the Wedge Peak range, which form the southern watershed of the Kangchenjunga Glacier, are of nearly horizontal gneiss. Many interesting old moraines, now grass-grown, occupy the Kangchen Valley and extend to below Khunza (11,000 feet). The finest of these occurs just opposite Kangbachen, and sweeps in a magnificent crescent from the right flank of the Jannu Glacier. Further down the valley, below Khunza, the old moraine of the Yamatari Glacier once dammed back the drainage from the upper Kangchen Valley, forming a lake nearly two miles long; though this barrier has long since been cut through, the lake has left a level alluvial flat on which the village of Khunza now stands. The Kangchen Valley itself, and its tributaries, present magnificent examples of river gorges—thus the western wall of Jannu rises at an angle of 1 in 1.97 above its valley base. The country between Khunza and the Yalung River is almost entirely occupied by the typical

Augen-gneiss, which dips in a general easterly and north-easterly direction. A layer of mica schist, however, dipping to the south-west at 10° was met with on the way over the Chunjerma, while a band of hornblende granite, apparently intrusive in the gneiss, was met with above Tseram in the Yalung Valley.

The summit of the Chunjerma above the lake is formed of Augen-gneiss, but an interesting rock with mosaic structure, composed of felspar, biotite, and sercrite, also occurs. The rocks are well glaciated and large erratics lie scattered over the surface, the view resembling very closely the pass of Llanberis in its general features. Little corrie lakes occupy hollows on either side of this pass, and both appear to be dammed by screes and moraine material. The rocks of the Namga Tchal Valley, which we ascended to the Kang La, were formed of quartzite overlain higher up by a foliated granite with hornblende and large crystals of muscovite. Near the summit the typical Augen-gneiss reappeared, and contained light grey veins of pegmatite and compact hornblende layers. To the north-east of the pass a massive coarsely crystalline granite occurs, and blocks of this form the terminal moraine of the glacier we crossed. The dip of the rocks was difficult to ascertain on account of the fog and snowstorm we encountered after crossing the pass. At Jongri the Augen-gneiss again crops out forming Kabur, and probably stretches away to Kabru and Kangchenjunga; intrusive veins of hornblende granite also occur. The dip of the beds of Kabur is about 12° N.N.W., but north of this the dip of the gneiss is universally north-east from 10° to 20° . The only remaining rocks requiring especial mention are those which I collected from the western face of Pandim at the foot of the Guicha La. As mentioned above, these were described by Hooker as looking like *a stratified series, into which veins of igneous rock had been injected*. Being winter, and being overtaken by bad weather, he was unable to approach nearer than Jongri, but he gives a sketch of the rocks as seen through a glass. It is curious that neither Major Sherwill, who first visited the Guicha La, nor Mr. Bose of the Geological Survey, who followed him with Mr. White, appear to have recognised the metamorphic character of these rocks, for a metamorphic series I found them undoubtedly to be. It is, however, only another illustration of the very thorough nature of the observations made by Hooker often, as in this case, under disadvantageous conditions as compared to his successors, and the astute inferences he invariably draws, inferences so far ahead of his contemporaries that they appear to have been ignored, as in the present instance, by subsequent travellers.

The series in question is displayed in the west precipice of



Pandim, and even at a distance the veins of pegmatite can be seen penetrating the more stratified portion of the cliff (see illustration). The rocks show great variety in hand specimens, but two types predominate.

The first is a coarse light-coloured rock made up of grains of quartz and calcite with crystals of garnet and more rarely idocrase. The second is a green striped rock containing garnets in eyes and a large proportion of epidote and hornblende: it also contains calcite and quartz, and appears to be interbedded with the former rock. Both rocks are intercalated with mica schists, and are penetrated by fine veins of igneous rock: this is sometimes pegmatite and sometimes a kind of fine hornblende schist, reminding one of the margins of the Scourie dykes described by Mr. Teall.

Under the microscope the green bedded rock is found to contain, in addition to garnet and epidote, a considerable quantity of scapolite and white augite. The garnets are light in colour and much cracked. They are full of inclusions of scapolite, which also occurs in large crystals. White augite is present in considerable abundance and numerous crystals of sphene. The augite frequently plays the rôle of ground mass to flakes of green mica. The abundance of scapolite in an undoubtedly altered calcareous shale is perhaps the most noteworthy feature of this rock.

The threads of hornblende schist penetrating these beds consist of a mosaic of microcline with very pleochroic hornblende, sphene, and occasional garnets, with well crystallised calcite at the junction with the altered rock.

The series is, however, much more complex than the above short description would imply, and would well repay a much fuller investigation in the field than I was able to make in the few hours at my disposal.

The problems of special interest awaiting definite solution are first, the age of the altered rocks and their connection with the fossiliferous series to the north, and secondly, the relation of the central Augen-gneiss of the district to these beds. The Augen-gneiss forms the mass of the moraines which descend directly from Kabru and the arête to Kangchenjunga, but the connection of the gneiss with the Pandim rocks is obscured by the glaciers and moraines filling the head of the Praig Chu Valley: does the gneiss penetrate the Pandim series, or do the beds of the latter range lie unconformably on the gneiss, and are both rocks penetrated by subsequent pegmatitic intrusive rocks?

This opens up the question of the origin of the Augen-gneiss which forms so large a proportion of the Kangchenjunga massif.

Is this a metamorphic gneiss as formerly supposed, or is it a foliated granite intrusion? All the evidence that I was able to obtain points to the latter conclusion. In composition it is a very simple rock, consisting almost entirely of porphyritic eyes of white orthoclase embedded in a foliated matrix of biotite, quartz, and plagioclase felspar. Orthoclase is also present in the matrix, but plagioclase preponderates. Apatite is very sparingly present. Crystals of tourmaline, hornblende, and garnet are invariably absent from the typical Augen rock, but are plentiful in the pegmatites associated with it. I was under the impression when studying these rocks in the field that the pegmatites were intrusive in the gneiss, but I never succeeded in collecting a specimen in which the two were associated, and it is possible that the pegmatites are apophyses of the gneiss, in which case the gneiss is certainly younger than the metamorphic series.

That the gneiss is an intrusive rock is further borne out by an examination of microscopic sections of the eyes of felspar. These are found to be sheered in a remarkable manner round inclusions, and to have developed a schistose structure resembling minute foliation, as shown by little wavy parallel threads of light seen when the mineral is turned to a position of maximum extinction between crossed nicols. This structure seems, however, to be absent from the plagioclase felspar forming the bulk of the ground-mass. This evidence, as far as it goes, would appear to point to the sheering of an igneous rock during its intrusion, but subsequent to the formation of the porphyritic constituent; the very rounded character of the eyes again confirms this.

If now we turn for a moment to a consideration of the relations of this gneiss to the altered fossiliferous series of the Chortenima range, we find that we have but two alternative theories. Either the sedimentary series is faulted against the gneiss found in its immediate proximity on the Jonsong La, or else the gneiss is intrusive in the sedimentary series. If we adopt the former view we have still to account for the profound alteration of the rocks, which alteration also extends to the beds described by Hooker in the Cholamo Lake district. There is no indication of regional disturbance, for the beds lie almost horizontally and quite unfolded. It seems much more natural when we once admit the probability of the gneiss being an igneous rock to go a step further and attribute the metamorphism of the sedimentary series directly to its intrusion.

It becomes then more than ever a matter of importance to ascertain the true age of the crinoidal limestones into which the

gneiss has been intruded, for this latter rock forms the bulk of the massif, and was in all probability intruded as a huge laceolitic mass during the folding which accompanied the elevation of the range, for it is only by assuming such a fanlike fold that we can account for the inverted dip of the Darjiling gneiss and the Dalings, the coal-bearing Damudas and the tertiary beds on the Southern foothills of Sikhim.

If we admit Hooker's suggestion of the presence of nummulites in these crinoidal limestones, and consider them to belong to the same series as those I have described above from the Chortenima range, then the chief elevation must have taken place in post-eocene times, and the whole of the denudation must be of pliocene age. If, on the other hand, the beds are to be considered as of palaeozoic age, the intrusion may still have taken place in tertiary times, but there will be no direct evidence of the submergence of the district since palaeozoic times. The evidence, as far as it goes, seems to militate against the limestone being of eocene age. Hooker himself admits the impossibility of determining the so-called nummulites, and I have searched in vain for any other recorded occurrence of crinoidal limestones of tertiary age in India to which they could belong. On the other hand, Mr. Greisbach has described white and red crinoidal limestones of carboniferous age from the central Himalayas, and Dr. Noetling mentions a shaly limestone containing crinoids of silurian age from Mandalay. On the whole, therefore, I am inclined to refer the sedimentary beds of north-west Sikhim to carboniferous or possibly silurian times, but the uplift of this portion of the Himalayas, and likewise the intrusion of the gneiss, may nevertheless still have taken place in tertiary times, for, as pointed out by Oldham, the occurrence of marine nummulitic beds at a height of many thousand feet on the north face of the main snowy range in Hundes, and again at a height of twenty thousand feet in Zanskar, shows that the elevation of this part of the Himalayas must have taken place entirely within the tertiary period. The presence of cretaceous fossils from the north-west of Shana shows also tertiary elevation. These beds appear a short distance north of Tinki, across the Arun River, and consist of chalky fossiliferous limestone and also beds of yellow and red ochre, while close to the north of Fort Shel-Kar very large fossil shells are found.

THE PHYSICAL FEATURES OF SIKHIM

The present configuration of Independent Sikhim, as in the case of some other mountainous countries, has been determined not so much by the actual character and strike of the rocks of which it is formed as by the combined processes of mountain elevation and atmospheric waste. Thus, if we study in detail the characters of any particular valley system, these are frequently found to be quite independent of either the strike, dip, or the folds affecting the rocks of the district. These valleys do not, generally speaking, lie along trough-like folds nor broken-down arches, nor do they appear to follow, as a rule, the lines of weakness developed between two rock masses of unequal hardness. Thus in Sikhim we have no dominant valleys etched out along shatter belts of crushed sedimentary rock, as, for example, the Rhone-Furka-Oberalp line in the Alps. Neither do we find that the billowy ridges over which the eye wanders northward from Tiger Hill to the snows of Kangchenjunga really correspond to the crests and troughs of the earth folds as in the case of the rolling waves of the Jura limestones breaking against the foot-hills of the Central Alps. This discordance of the valleys with the general strike of the rocks is noticed by Hooker, who observes: 'I have generally remarked in Sikhim that the channels of the rivers when cutting through or flowing at the base of bluff cliffs, are neither parallel to nor at right angles to the strike of the rocks forming the cliffs. I do not hence conclude that there is no original connection between the directions of the rivers and the lines of fracture; but whatever may have once subsisted between the direction of the fissures and that of the strike, it is in the Sikhim Himalaya now wholly masked by shiftings which accompanied subsequent elevations and depressions.'

The above statements, however, apply only as regards details. If we take Sikhim as a whole, we find that it is separated off naturally from Tibet and British India by broad differences of structure. No single valley passes through these barriers which fringe the country everywhere, with the sole exception of the river Teesta, which carries the whole of the drainage out into the plain of India to the south. Looked at broadly, however, one fact stands out with considerable significance. The valley of the Teesta, with the exception of the bend between Toong and Singtam, runs directly north and south. A study of the recorded observations reveals the fact that the beds east of the Teesta invariably dip in an easterly direction; while south of Kabru, the dips recorded from the Singalila ridge, the Dubdi

Pamionchi district, and the country drained by the Kulhait and the Rammum, invariably show a westerly dip. The Teesta, therefore, in its southern portion would appear to occupy a large anticlinal fold. In the present state of our knowledge it is impossible to say whether this is really a simple fold or faulted axis, as a great deal more detailed work is required before a comparison of the rocks on either side of this main valley can be made.

Next in importance to the Teesta is its principal affluent, the Great Rangit. With the limited information at our disposal it is difficult to trace any direct connection between this valley and any structural weakness of the crust, further than to point out its general parallelism to that of the Teesta. One fact, however, which both these exhibit in connection with all the Sikhim valleys is the evident antiquity of the drainage system. This is shown not only in the depth of the gorges, but also by their general straightness and the complete absence of water-falls or lakes throughout their course. At what geological period the present drainage was initiated it is impossible to say. If I am right in my suggestion that Sikhim has enjoyed Continental conditions since mesozoic or possibly even late palaeozoic times, all traces of the original drainage must long since have disappeared, modified as it must have been by subsequent earth-movements in tertiary times. The more modern drainage, however, as we now find it, shows some features of great interest from the point of view of river development.

If we study the general scheme by which the water, shed from the eastern flank of the Kangchenjunga range, finds its way into the Teesta, we see that we can divide Western Sikhim into two portions. The first, embracing the country north of Pandim and Kabru, drains directly into the Teesta by a series of valleys running due east and west. In the second portion, to the south of this, however, we find the Singalila ridge drains not into the Teesta, but into the Rangit, until we reach the Rammum, which we may best regard as a westerly tributary of the Teesta into which the Rangit flows. For though, geographically speaking, the Rammum is a tributary of the Great Rangit, geologically speaking the case is almost certainly the opposite. That is to say, the easterly flowing Rammum-Rangit is older than the portion of the Rangit above its junction with the Rammum River. The Rammum, therefore, belongs to the same original series of westerly tributaries of the Teesta as the Talung Chu, the Zemu Valley, and the Lungma Chu to the north.

The absence of such tributaries of the Teesta between the Talung Chu and the Rammum would appear to be due to the encroachment of the Great Rangit, which, starting as a tributary of the Rammum,

has gradually cut its head waters back northwards, beheading and capturing one by one the original westerly tributaries of the Teesta which lay in its course. Of these the Kulhait is the most conspicuous; but very interesting evidence of the same process is also furnished further north, where the Rathong and Praig Chu, rising in the glaciers of Kabru, are continuing the encroachments into the heart of these northern tributaries. The best evidence of this is furnished by the district round Jongri, where traces of an old westerly tributary of the Teesta still exist. Jongri itself is a curious depression notched out of the ridge of Kabur, which forms the water-parting between the Rathong Chu and the Praig Chu. It is a somewhat swampy alp, the only one of the kind in the neighbourhood, which in summer supports a small herd of yak belonging to the Rajah of Sikhim. Immediately to the west, across the gorge of the Rathong Chu, lies the gap of the Kang La Pass and the valley of the Churung Chu. Standing on the Kabur ridge and gazing westward, the eye is at once arrested by the peculiar relation of the Churung Chu to the Rathong Valley, into which it drains. The former occupies a nearly level upland glen, three miles in length, and some 2000 feet above the floor of the Rathong Chu, and this elevation is maintained nearly to its mouth, whence it empties itself by precipitous cascades into the valley beneath. The same is the case with a similar valley a little to the north, the two converging somewhat as they approach the precipitous trench of the Rathong, into which the drainage from both valleys plunges (see plates, p. 298).

The question immediately arises, Why have we these abrupt relations between the Rathong and its tributaries? Why have not the Churung Chu and its neighbours cut down their beds to a grade more accordant with that of the valley into which they flow? Still standing on Kabur and turning the eye southwards, the observer is again struck by the curious notch of the Jongri plateau, hanging in mid-air, and cut off to east and west by the precipitous gorges below. The eye travels unconsciously back to the abruptly truncated valley of the Kang La, and in imagination the observer wonders idly where the drainage would have flowed but for the chasm lying in its path. Suddenly it flashes across him that, but for that chasm, the waters of these hanging valleys would even now be flowing there right at his feet across the notch of the Jongri plateau, overwhelming his tents and sweeping them along with the struggling yak herds away eastwards to the Teesta to be whirled under the cane bridge at the Ralung Ghats.

This then is the history of those truncated valleys and that Jongri notch. They are part and parcel of the same old easterly

flowing tributaries of the Teesta, now dissected and mutilated by the persistent encroachments northwards of the headwaters of the Great Rangit. Here we have the key to the problem, why has the Teesta tributaries from the west only north of the Guicha La ridge. We have here caught nature in the act and made her answer the question which she herself has set us. A few thousand years ago this valley must in truth have existed, of which we now find only the fragmentary remains, while the lateral valleys further south had already been completely destroyed. A few thousand years hence, when the eastern glaciers of Kabru and Kangchenjunga exist no longer, the Praig Chu will have eaten its way backwards by the Guicha La into the Talung Valley, and one more of the western tributaries of the Teesta will exist no more.

Novel as this interpretation may seem to some, it is not without parallel in other deeply dissected countries. At the head of the Inn Valley in the Engadine district of the Alps we meet with a similar encroachment of the river Maira on the old gathering ground of the Inn, and the same capturing of old lateral valleys which once formed tributaries of the latter river. The melting snows of the Albigna and Forno glaciers, which once flowed gently to the Inn and the Black Sea, now plunge tumultuously over the lips of these truncated valleys to swell the waters of the Adriatic.

But, though the general origin of these valleys thus seems clear, there are still some points in the process which require explanation. The first question which naturally presents itself is, Why should the southerly flowing tributaries of the Rangit prevail over the easterly flowing affluents of the Teesta? And secondly, Why have not the lateral torrents cut down their valleys to a more accordant grade with that of the Rathong Chu?

With regard to the first problem, it is a recognised fact that a river flowing directly to the plains has a greater average fall per mile than one which pursues a more circuitous and consequently longer route. Its erosive power will therefore be greater and its assaults on a given watershed more vigorous. Now the distance traversed by the Rathong and Rangit from Jongri to Pashok is decidedly less than that traversed by way of the old Jongri tributary or of any of the westerly tributaries still existing further north. This difference, however, does not seem to be sufficient to account for the vast gorges into which the drainage of the Kang La district plunges, and some additional explanation seems to be required.

It seems fair to assume that in the case of a flexible solid like our earth, those portions of the surface over which material is

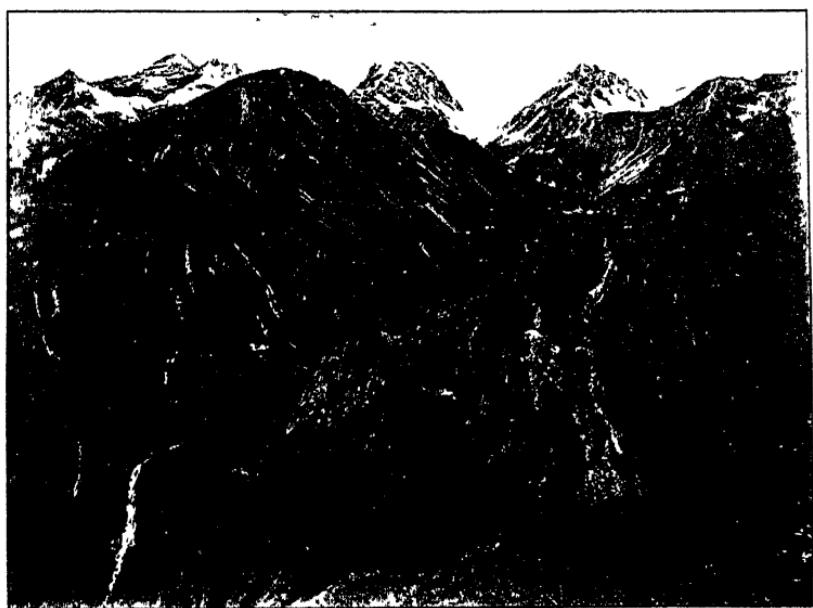
being deposited should undergo a certain amount of compression, while those portions from which material is being constantly removed should show a tendency to a relative expansion. It is only recently that sufficient facts have been collected from which deductions can be made as to the effect of the removal of a thick covering of ice from the surface of a considerable portion of the Northern Hemisphere. But, year by year, these facts appear to point more and more clearly to the recent elevation of districts once covered with glaciers and ice-sheets. This is especially marked over the Scandinavian peninsula, where the greatest post-glacial rise of land has recently been shown to coincide with the area of the greatest depression below the axis of the inland ice.

Now in Sikkim, as elsewhere, the area covered by glaciers was once much more extensive than at present. The massif of Kangchenjunga must therefore once have been buried much more deeply in ice. This massif lies directly to the north of the encroaching tributaries of the Rangit, and therefore any rise of land consequent on the melting away of this ice-covering would produce an immediate effect upon these tributaries. The easterly flowing valleys in this neighbourhood would, however, be merely tilted sideways, and these streams would not have their velocities perceptibly increased. In this way a differential rate of erosion would rapidly be established. But, although this would be the case, we should expect the lateral valleys to gradually cut their mouths backwards, as the deepening of the Rathong proceeded. That they have not done so to any appreciable extent seems to require further explanation, and it is, I think, to be found in the presence of glaciers which still occupy the upper portions of these valleys, and which, till recently, filled the valleys throughout their length, as is proved by the moraines and rounded surfaces not yet obliterated. These glaciers, by protecting the valleys they occupied from river erosion, would thus prevent the adjustment which we should otherwise expect to have taken place. That this protection by glaciers is a very potent factor is further illustrated by the raised floor preserved under the glacier, at the head of the Rathong valley itself, not to invoke numberless instances from other glaciated districts of the world. This protection was long ago insisted on by Mr. Freshfield, in a paper read before the Geographical Society in 1888, and subsequent observation has only tended to confirm his views as there expressed.

That the glaciers now found clustering round the higher peaks once extended much further down their valleys we have ample evidence. I have already mentioned the moraines found below Lachen at a height of 8790 feet; other instances are the moraines of Kang-



HANGING VALLEYS FROM JONGRI.



bachen at 11,000 feet, and those mentioned by Dr. Blanford as damming the Bedangcho lake, near the Jelep La, at 12,700 feet.

Hooker and Blanford both mention the abundance of moraines in the Yalung Valley, showing the former extension of the moraines of that district; but they both comment on the absence of polished or striated surfaces on the rounded rocks below the present ice-level, a statement which applies also to the district we visited, for which the climate is doubtless responsible. One of the most interesting districts in Sikhim in this connection is the plain of Phalung, to the east of the Lachen Valley. The plain is entirely composed of moraine material, dotted over with erratic blocks, which enclose an old lake bed.

In his account of the district Dr. Blanford remarks:—‘I am inclined to suspect that these moraine deposits of Phalung must have come from the Lachen Valley at a time when the high Tibetan Table-land to the north was a mass of snow, and a large glacier passed off between Kinchinghas and Chomiomo, and down the Lachen Valley, the same great glacier which left its terminal moraines near Lamteng, at Tangu, and in a dozen intermediate spots, as it slowly diminished in size.

‘Such a great glacier, after turning round the steep, lofty flank of Kinchinghao, must have been far higher than the low hills which separate Phálung from the present Lachen Valley, and a branch of the glacier descending into the Cháchú Valley may easily have filled it with a mass of debris which the little Cháchú Glacier was unable to sweep away.’ From the configuration of the country, the highest elevation between Phalung and the Lachen Valley being only 160 feet, this suggestion seems evidently the correct explanation.

With regard to the present condition of the glaciers, all those we surveyed seemed to be in a state of retreat. This is evidenced on all hands by the old lateral and terminal moraines and the absence of any sign of overriding or incorporation of terminal moraines, as much as by the sloping character of the glacier snouts themselves.

One further physical feature remains for mention. In many of the more wooded portions of Sikhim the outlines of the hills, instead of presenting the concave denudation curves so characteristic of hill features in a humid climate, show smooth and convex form; this is doubtless due to the protection afforded by the vegetation as described by Mr. Marr elsewhere under the name of Moels.

In conclusion, I would call attention to the complete absence of any lakes occupying rock basins in the whole of these eastern valleys, in spite of the former extension of glaciers for many miles below their present limit. The same is also the case, I believe, wherever the Himalayan valleys have been examined elsewhere.

A P P E N D I X B

NOTES ON THE MAPS

By E. J. GARWOOD, M.A., F.G.S.

THE accompanying map has been constructed from a rough plane-table survey made during my journey round Kangchenjunga with Mr. Douglas Freshfield in 1899. In this I adopted as a basis over thirty fixed points determined by the officers of the Survey and laid down in the transfrontier map on the scale of two miles to the inch.

This official map, which is confined to the Sikkim side of the main chain, though sufficiently accurate in its chief features, does not profess to delineate the details of the Kangchenjunga massif, neither (except by marking the Zemu Glacier as 'moraine') does it take cognisance of the numerous glacier systems which drain the central portion of the range. The native name Kangchenjunga, meaning literally 'the five treasures of greatest snow,' given by the inhabitants of Sikkim to the five loftiest summits in which the range culminates, probably refers to the roof-like character of the peaks, and does not necessarily argue any early knowledge of the five chief glacier systems; the word translated 'storehouse' being said to mean primarily the little barns with high-pitched roofs in which the natives store their crops.

My plane-table survey consisted chiefly of bearings to the principal ridges, valleys, and glaciers, the details of these being subsequently filled in during the final construction of the map.

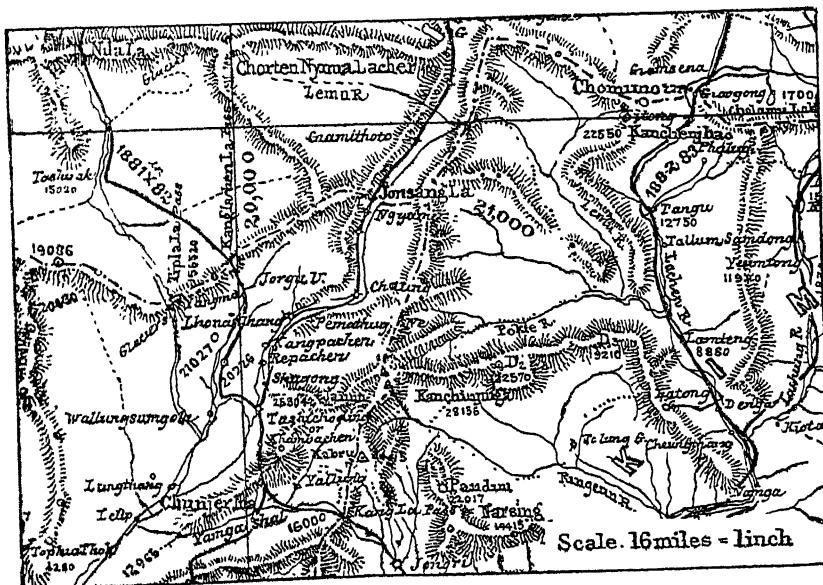
The material used for this purpose was obtained as follows: From each plane-table station I took a round of photographs, in all upwards of a hundred, from which much of the detail of the map has been derived by a method well known to cartographers as set forth in *United States Coast and Geodetic Survey Report*, 1897, Appendix No. 10.

In addition to my own photographs, I have derived great assistance

from the beautiful panoramic views taken by Signor Vittorio Sella for Mr. Freshfield during the expedition. The positions from which these were taken have been determined with considerable accuracy, the photographs used containing always three or more points already fixed on the map, the focal lengths of the lenses with which they were taken being also known.

Between the plane-table stations numerous observations were made with a prismatic compass, and a quantity of photographs were taken by Signor Sella and myself from positions which were also afterwards determined in a similar manner.

I am further much indebted to various notes and sketches made



REPRODUCTION OF PART OF CHANDRA DAS'S MAP.

by Mr. Freshfield during our journey, and I should like here to acknowledge the great obligation I am under to Mr. Freshfield, not only for inviting me to accompany his expedition, but also for invaluable help and criticism throughout the construction of the map.

map. My thanks are also due to Mr. Reeves, the Head of the Map Department of the Royal Geographical Society, for much kind assistance, especially in the matter of calculating true heights from my aneroid determinations, and to Mr. Batchelor, who has assisted me throughout in the drafting of the map.

Since our return I have consulted a copy of the native surveyor Rinsing's original map of the Nepal side of the watershed, and the recent information obtained by Messrs. White and Hoffmann, and embodied in one of the small-scale survey-maps. Copies of these maps were kindly given me by Colonel Gore, the Director-General of the Indian Survey. A new edition of the route-map of Sikhim appeared in December 1900, from which I have extracted further information with regard to the trend of the valleys immediately to the south and west of Lama Anden.

Rinsing's map, though fairly correct in its general bearings, was found to be too vague to afford much assistance in supplementing detail for our map, his strange habit of delineating glaciers as both originating and terminating in streams, a peculiarity emphasised in the newest editions of the small-scale Government maps, being often highly confusing.

The only other map of this district that calls for mention is that accompanying Sarat Chandra Das's paper, 'How I crossed the Jon-Tsang-La (*sic*) Pass,' read before a meeting of the Buddhist Text Society of India at Darjiling, in November 1899, *after* the return of our expedition. There can be no doubt that the pass actually crossed on this occasion was the Chatang La, as there stated; the name Jonsong La being added afterwards, on the supposition that the two names referred to the same pass. That this is not the case is perfectly evident from the account of his route after leaving Ramthang, which he describes as lying between two parallel ranges which, 'after a time, changed from north to north-west,' the ground traversed consisting of boulders and bogs; whereas the route from Ramthang to the Jonsong La runs at first due east and afterwards east-north-east, and lies first over pastures and then over the Jonsong La glaciers. This confusion of two totally different valleys and passes and the omission of one, has an amusing effect on his map, for it leaves an isolated basin, marked as 'Chorten Nyima Lacher,' to drain which he has carried the source of the Zemu River from the east right through the two main watersheds, and brought himself out still to the west of the main north and south watershed instead of to the east (see preceding page).

The general differences between the present map and those published by the Indian Survey will be easily visible on comparison. It may, however, be well to indicate a few of the chief structural alterations adopted. In addition to the insertion of the main glaciers and névés, some sixty in number, as accurately as the material at my disposal would admit, the following are the principal alterations introduced on the Government map:—

1. In the basin drained by the Zemu Glacier I have inserted the main spurs which buttress the north-eastern wall of Kangchenjunga and the névés which lie between, and similarly the ridges and glaciers bounding the southern side of the Zemu Glacier from Si-imvovonchum to Lama Anden. These will, I think, be found to be delineated with sufficient accuracy. The same cannot, however, be said with regard to the north-west feeder of the Zemu and its tributaries, nor the glaciers which cling to the flanks of Lama Anden itself. The latter we did not visit, and only photographed it from afar off. The former we were prevented from exploring by the snowstorm of September 24, and I have only one photograph, taken by Mr. Hoffmann, of the ice-fall at the point where it enters the trunk stream. My information is derived chiefly from Messrs. White and Hoffmann's sketch, and Mr. Freshfield's notes made before the storm, and such observations as we were able to make on the direction of the watershed. Lastly, the summits of Si-imvovonchum, seen from the Zemu Glacier, have been removed from the main watershed, since bearings taken from the Thé La, the left bank of the Zemu Glacier, and from the ridges above Jongri, all indicate that the triangulated summit is not visible from the north, as formerly supposed.

2. An alteration in the position of the Thé La. This has been moved somewhat to the east as the result of a study of photographs taken both by Signor Sella and myself, from carefully ascertained positions in the neighbourhood of the pass, and on both sides of it, the bearings from these including all the fixed peaks from Lama Anden to Kangchenjunga.

3. The watershed forming the head of the Langpo Valley has been removed further west, though its exact position is uncertain, owing to the absence of any cross-bearings, and the minor ridges and glaciers of this basin have been drawn in from bearings taken on the spot. The pass visited by Mr. Freshfield at the head of the north branch of the Langpo Chu is not the Chortenima La, as was stated by Rinsing at the time, but a gap situated some miles further east, not on the main Tibetan watershed between the Teesta and the Arun, but on a spur separating the upper Langpo Chu from one of its more northerly tributaries. The general topographical features of the Lhonak district have also been considerably altered. Thus, I have mapped in the glacier at the head of the Tumrachen Chu, which I ascended for some distance. From this glacier I examined a gap in the watershed to the north-west, which appeared practicable for coolies, and which should lead directly to the upper basin of the Langpo Chu; by following this route, instead of crossing the

Thé La, a day's march should be saved in traversing from the Zemu Glacier to the foot of the Jonsong La.

4. On the Nepal side most of the detailed information is laid down for the first time. Though made independently, my map agrees fairly well, as far as the general trend of the valley is concerned, with Rinsing's sketch-map of the district. Great difficulty was experienced at the time in obtaining bearings in the Kang-bachen valley on account of fogs, and I found it no easy task after a day's march through clouds to identify the summits of the Jannu range from the opposite side. At Khunza I was cautioned by Mr. Freshfield against undertaking survey operations for fear of further rousing the suspicions of the natives, who, besides demanding our rifles, were reported by Rinsing to have sent down to the nearest garrison news of our arrival. Scarcity of food, also, for the coolies made it advisable to push on to Jongri without a halt. I have, therefore, only attempted a general delinement of the Jannu and Yalung Glaciers, the main features of the latter having been inserted from Rinsing's map and from photographs supplied by Major Waddell, taken from the Semo La. The Kang La is indicated where we crossed it, and is not to be confounded with the Kang La Nangma further north, which is not the practicable pass from the Yalung Valley to Jongri, but a high glacier basin.

5. In the neighbourhood of Kabru and the Guicha La numerous glaciers were mapped in on the spot, and some slight alterations have been made in the watersheds shown in the survey maps. In this connection there is one identification of Major Waddell's which I should like to correct. The peak marked Kangtsen in the profile on p. 416 of his book¹ is not the 21,970-feet peak lying immediately to the south-west of Kabru, but another peak situated further to the south on the Kang La watershed. Both of these peaks and their relative positions are well seen in Plate IV. of Dr. A. Boeck's Himalayan Album.

The details of the Talung Glacier and its névé have been inserted from photographs taken by Mr. Hoffmann during his passage through the Yalung Valley on his way over the Guicha La. For the valley below information has been obtained from a skeleton map corrected in 1894 and 1900, to which Mr. White, the Political Officer in Sikhim, is said to have been a contributor. Outside our line of route the Government map has been followed, the authority for such alterations as have been inserted being derived from distant photographs, or, in the case of heads of the glens under Si-imvovonchum and Siniolchum, from sketches made by Mr. Freshfield from above

¹ *Among the Himalayas*, see p. 300.

Gantok. These portions of the map are obviously mere sketches, with no pretension to be more than rough indications of the extent of the snow and glaciers, and it is much to be regretted that neither from Mr. White nor from any other quarter have we been able to obtain more detailed information.

Heights.—The heights for which I am responsible, given on the map, were taken in most cases with a Watkin aneroid barometer. This was constructed in two portions, a high instrument registering from the sea-level to 15,000 feet, and a low instrument registering from 15,000 feet to 30,000 feet. These were tested against a portable mountain barometer kindly lent me by the Director of the Meteorological Office, to a height of 16,000 feet, and found to work perfectly. They were also kindly tested for me on my return by Colonel Watkin himself, under the conditions under which they were used, viz., by destroying the vacuum between each change of pressure, and taking a reading one minute after the instrument had been put into action. In addition to the readings of the observatory barometer at Darjiling, I have a series of observations kindly taken for me with a portable barometer, which I left with him for the purpose, by a father of St. Joseph's College, and a further series from Gantok, which Captain Le Mesurier arranged should be taken for me twice a day at stated hours.

An observation taken by Signor E. Sella with a short mercurial barometer, also calculated with Calcutta as a lower station, gives the Jonsong La the height of 20,340 feet. This remarkable correspondence with the observation taken with the Watkin aneroid used during our journey is a strong confirmation of the other results obtained with the same instrument, as well as of the value of the Watkin aneroid in the determination of heights.

With regard to nomenclature, a peak without a name is a difficult one to locate or to describe; I have, therefore, inserted several English names suggested for this purpose by Mr. Freshfield or myself. I received from India, but too late for incorporation in the map, the following list of their Tibetan equivalents, which I should be glad to see adopted in lieu of our English names by future cartographers; they are:—

Cloud-gap	=Tinseb.	The Twins	=Ishemah.
The Pyramid	=Hoong-Khoong.	The Bridesmaid	=Pag-yok-ma.
The Tent peak	=Guryibri.	Furrowed peak	=Tokpori.
The Dome	=Bāgam.	Limestone range	=Dokarrigū.

The following table shows the readings corrected and the heights determined:—

HEIGHTS CALCULATED FROM OBSERVATIONS TAKEN WITH
WATKIN ANEROID, No. 22.

Date.		Corrected aneroid reading.	Barometer at Darjeeling (7300 feet above sea-level)	Observed temperature.	Darjeeling mean temperature	Height above sea-level.
Sept. 19	Camp in Poki Chu Valley, . . .	19.80	23.000	50°	60°0	11,471
,, 20	Edelweiss first found, . . .	19.60	23.000	50	60°0	11,752
,, 20	First camp, Zemu Glacier, . . .	18.03	22.929	40	61.4	13,910
,, 21	Second camp, Zemu Glacier, . . .	17.93	23.011	45	62.6	14,208
,, 22		17.93	23.003	45	60.6	14,179
,, 23	Third camp, Zemu Glacier, . . .	17.31	22.989	45	62.4	15,139
,, 24		17.13	22.937	40	58.6	15,299
,, 27	Second camp, Zemu Glacier, . . .	17.93	23.079	45	59.9	14,270
,, 28	Jak camp, south side Thangchung La, . . .	18.03	23.092	45	60.0	14,101
,, 29	Top of Thangchung La, . . .	16.61	23.087	40	60.1	16,333
,, 29	Camp in Tumrachen Valley, . . .	18.03	23.087	50	60.1	14,204
,, 30	Top of moraine, Tumrachen Glacier, . . .	17.00	23.083	45	59.9	15,736
,, 30	Camp south side of Thé La, . . .	17.43	23.083	40	59.9	15,011
Oct. 1	Top of Thé La, . . .	16.36	23.097	40	59.1	16,752
,, 1	Lhonak 1st camp, . . .	17.85	23.097	50	59.1	14,444
,, 2	,, 2nd camp, . . .	16.84	22.971	45	58.1	15,846
,, 3	,, 3rd camp, . . .	16.64	23.055	45	59.4	16,290
,, 4	Camp moraine north side Jonsong La, . . .	15.94	23.133	40	60.6	17,519
,, 5	Camp rocks foot of Jonsong La, north side, . . .	15.16	23.069	35	60.1	18,749
,, 6	Top of Jonsong La, . . .	14.34	23.075	32	58.9	20,207
,, 6	Calculated from Calcutta,	20,348
,, 6	Camp below Jonsong La, south side, . . .	14.58	23.075	32	58.9	19,767
,, 7	Second Camp, Jonsong La, south side, . . .	15.46	23.103	40	58.3	18,290
,, 8	Camp corner, Kangchen Valley, . . .	16.09	23.154	40	58.1	17,260
,, 9	Camp in dried moraine lake, Kangchen Valley, . . .	17.13	23.135	40	58.1	15,531
,, 10	Romthang, . . .	17.22	23.137	45	57.6	15,431
,, 10	Camp Kangbachen, . . .	18.00	23.137	40	57.6	14,177
,, 11	End of Jannu Glacier, . . .	18.21	23.135	45	58.0	13,895
,, 13	Top of Senon La (Chunjerma), . . .	17.53	23.139	35	56.4	14,853
,, 13	,, next pass, . . .	17.23	23.139	40	56.4	15,361
,, 15	,, Kang La, . . .	16.60	23.139	32	58.1	16,313

I have entered somewhat into detail in these notes on the construction of the map, not so much to excuse myself for the many shortcomings in the topography, for I am not unmindful of the proverb, 'qui s'excuse s'accuse,' but in order that those who follow in our footsteps, be they climbers or surveyors, may, while choosing a route, know the portions of the map they may treat with some degree of confidence, and those they should regard with a prudent scepticism in all matters of detail.

NOTE ON THE GEOLOGICAL MAP

The first attempt to portray any of the physical features of Sikkim on a geological map was that made by Captain W. S. Sherwill in 1854, in which he added a few general geological facts regarding the structure of the Singalela ridge to the reprint of Sir Joseph Hooker's map which accompanied his paper, on a tour along the Nepal frontier, in the *Journal of the Asiatic Society*.

In 1874 Mr. F. R. Mallet published a rough coloured map of British Sikkim in illustration of his report on the economic products of the Darjiling district and Western Duars, in which he endeavours to delineate the line of junction of the Darjiling gneiss with the Daling series; this is included in the *Memoirs of the Geological Survey of India*, vol. xi. p. 1. This map was reprinted with some alterations in the Survey records for 1891 in connection with some geological notes of Sikkim by Mr. P. H. Bose.

These rough sketches of the geology of Sikkim are all that have so far been published, and they refer chiefly to the southern portion of the country, or British Sikkim.

In the accompanying geological sketch map I have endeavoured by means of arrows and geological notes to represent all that is so far recorded regarding the dip and character of the rocks.

As far as the north-east portion of the country is concerned, the information is derived from Hooker's careful description, together with Dr. Blanford's notes on the Eastern Boundary, while the information regarding the Singalela range is taken from Captain Sherwill's paper and Hooker's *Himalayan Journals*. The rest of the map records my own observations made during our tour of Kangchenjunga in 1899, as related in the foregoing pages.

The sketch map on which the geological notes are printed in red is founded on the last edition of the Government 'Road Map of Sikkim.' I have endeavoured, however, to bring the topography up to date first by incorporating our own map on the glaciers of the Kangchenjunga crest, and secondly by adding Mr. White's survey of the northern frontier, published this year by the Indian Survey Department.

The method chosen to embody the geological information is necessitated by the circumstances of the case. It would be quite impossible at present to represent accurately in colour the character and extent of the gneisses, pegmatites, and schists which form the bulk of the rocks of the district.

APPENDIX C

THE NARRATIVES OF THE PUNDITS

I THINK it desirable, for various reasons, to reprint the following extracts from the Official Reports of the natives employed by the Indian Survey, who were, since Sir Joseph Hooker, my only predecessors in the Nepalese valleys of Kangchenjunga.

It affords me pleasure to give to these brave and intelligent men the full credit they deserve for their bold spirit of adventure and their remarkable powers of topographical and general observation. Their narratives are valuable as contributions to our knowledge not only of the country traversed but also of the people of the district, their way of living, and their beliefs. Indeed, it is in this respect, as general observers even more than as cartographers, that I am disposed to estimate highly such men as Sarat Chandra Das and Rinsing. As mapmakers they have their obvious limitations; though Rinsing, had his work been interpreted by draughtsmen skilled in mountain delineation, might have furnished much more new detail to our government maps than he has succeeded in doing. I should like also, in order to avoid the possible misapprehension of certain necessary comments, to say here that as regards mountains and mountaineering I regard the stories of the Pundits' adventures as essentially 'true tales'—from their point of view. So long as his official superiors are loose in the use of the technical terms of orography it can be held but small blame to a native if he employs such words as *glacier* and *crevasse* in the wrong places. That these explorers were capable of considerable feats of physical strength is clear. To carry his employer on his back up the last slope of Mont Blanc is a feat that, as far as I know, no Chamoniard has ever attempted. These hardy fellows seem to have on occasion carried one another cheerfully at elevations of from 18,000 to 20,000 feet. Such performances are one more proof of the extraordinary variability of the effects of altitude on human powers, and of the consequent worthlessness of much dogmatic and so-called scientific writing on this obscure and intricate physical and physiological problem.

The first narrative here reprinted is that of Sarat Chandra Das's journey across the Himalaya to Tashilumbo in Tibet in 1879. It was originally printed as a Government Report in 1881. It was reprinted in the *Journal of the Buddhist Text Society*, vol. vii. part 1, 1900. In the reprint the Babu introduced for the pass he had previously described as the Chathang La the name 'Jon Tsang La,' and identified it with the Jonsong La of Rinsing and myself. I think it probable that this identification is erroneous, and that he really crossed a pass in the position of that marked on maps as the Chabok La, which lies some miles west of the Jonsong La and is approached from the south by a different glen. I have given previously (p. 24) further reasons for holding this view.

I quote the 'Prefatory Note' of Mr. Croft, the Babu's official superior in 1881, as it furnishes a brief explanation of the objects of his first journey. The spelling of local names has not been modified in these extracts.

D. W. F.

PREFATORY NOTE TO THE NARRATIVE OF A
JOURNEY TO TASHI-LHUNPO IN 1879

Babu Sarat Chandra Das, the writer of this Narrative, was, in 1874, while a student of the Engineering Department of the Calcutta Presidency College, appointed head master of the Tibetan Boarding School, then opened at Darjeeling under the orders of the Lieutenant-Governor, Sir George Campbell. Babu Sarat Chandra applied himself assiduously to the study of Tibetan; and paid several visits in subsequent years to the monasteries and other places of interest in Independent Sikkim, where he made the acquaintance of the Raja, his ministers, and other persons of importance. In 1878 Lama Ugyen Gya-tsho, a monk of the Pema-yang-tse monastery, who held the post of Tibetan teacher in the same school, was sent to Tashi-lhunpo and Lhasa with tribute from the Pema-yang-tse monastery; and advantage was taken of this opportunity to find out whether it would be possible for Babu Sarat Chandra Das to visit Tibet, as he much desired to do. The Lama met with little encouragement at Lhasa; but at Tashi-lhunpo the Spiritual Prime Minister of the Tashi Lama, with the permission of the latter, sent by the hands of Ugyen Gya-tsho an invitation to 'the Indian Pandit Sri Sarat Chandra Das' to visit Tashi-lhunpo, where his name had been inserted as a student in the Grand Monastery; offering him his choice of routes, and commanding all Jongpons (district chiefs), or other persons to whom the letter might be shown, to help forward the Pandit with all his baggage. In accordance with this invitation

Babu Sarat Chandra, accompanied by Lama Ugyen Gya-tsho and taking with him a few scientific and other presents, together with a *photographic camera*, set out for Tashi-lhunpo in June 1879. The travellers returned to Darjeeling towards the close of the year, after a residence of three months at the capital. They were hospitably entertained by the Prime Minister, who gave Babu Sarat Chandra a cordial invitation to return to Tashi-lhunpo in the following year. This, however, he was prevented from doing, owing to the disturbed state of Sikkim in 1880.

* * * * *

A. W. CROFT.

1st August 1881.

EQUIPMENTS, ETC., FOR THE JOURNEY.

1. *A companion in Lama Ugyen-Gya-tsho.*
2. One guide from Jongri to Kambachan (Gyunsa).
3. Two coolies.

One pocket sextant.

One prismatic compass.

Two hypsometers, one thermometer.

One field-glass, and one hundred and fifty rupees cash.

HOW I CROSSED THE JON-TSANG LA PASS

OVER 21,000 FEET IN THE KANG-CHAN JUNGA RANGE

(Extracts from the Narrative of a Journey to Tashi-lhunpo in 1879)

CHAPTER I

17th June 1879.—At 8 A.M. we set out for Jongri.¹ At 10 A.M. we reached a zone where we met with new families of trees. The vegetation changed abruptly and varieties of rhododendron, juniper, and birch displaced the oaks and chestnuts of the lower zone. The leeches had disappeared. The slope, from 9000 to 12,000 feet in height, is known by the name of *Mon Lapcha*. The scenery was exquisitely beautiful, chiefly owing to the profusion of flowers, amongst which the varieties of rhododendron (red and pink) were conspicuous. The beauty and variety of the vegetation made me deeply regret my ignorance of botany. Midway between Bakhim

¹ From Bakhim, a few hours below Jongri on the path from Yoksun.—D. W. F.

and Jongri I met Dr. Inglis, a venerable old gentleman, who had come out from Darjeeling to see Jongri. Owing to the stubbornness of the coolies and the improvidence of his guide, he had been reduced to great straits for want of provisions, and was unable to proceed further towards the snows. Dr. Inglis told me that he had taken a fancy to visit the Himalayas on his way to New Zealand, where he was going to take charge of his estate. I was sorry that I could not give him all the assistance he required, but I did what I could for him to the best of my power and means.

At 5 P.M. we reached Jongri, and took shelter in a cowherd's house. Water boiled at 187° , giving a height of 13,700 feet; the temperature was 49° F. in the shade. I was much struck with the extreme beauty of Jongri. The slopes were neat and trim to the eye, with flowers and dwarf shrubs scattered over them, and a few yaks (*Chamari* cow) grazing here and there. The trees were in full foliage, and the valleys below were a mass of rhododendrons and other flowering trees. The evening breeze was cool and bracing; and the parting rays of the sun gave a crimson tinge to the peaks of snow and the whole atmosphere. The Hindu poets tried in vain to describe these regions which they had never seen; but even when seen, language fails to convey any idea of their beauty. To my right Kabur raised its snowy peak; in front the great Kang-chan looked down on me; to the left were the icy cliffs of Kang-la; while behind me the Rathong kept up its ceaseless roar as it rushed away to the south. Here we spent a whole day.

19th Junc.—At 10 A.M. we set out from Jongri. The sun could scarcely be seen on account of the dense mist, but the Lama succeeded in taking the bearings for the route survey. On two successive nights I tried to take observations by the sextant, but could not see a single star for the fog. The sun was too high in June to enable us to take a meridian altitude.

At 1 P.M. we crossed the Rathong by a bridge of planks, and through endless groves of rhododendron made our way towards the Nepal frontier on the west. At 3 P.M. we reached the junction of the Yampung and Kang-la roads. From this place there is a road leading towards Singla, Phellut, and Sum-dub-phuk (Sundukfoo) on the Tongloo Range. We followed the course of the river Chu-rung which rises from Kankar-teng. Here our guide (Paljor) killed a red-crested hen-pheasant with a stone, but failed to hit the cock. We were then overtaken by rain, and at 3 P.M. arrived at Te-gyab-la (14,800 feet), where we took shelter in a cave under a huge mass of rock. Here we met three Tibetans, from whom we learnt that Singbeer the Nepalese out-post guard, had given up his ambitious

proposition, and the Pass was declared open. This was excellent news. The wind was very cold and snow began to fall. There was no vegetation except shoots of fresh grass just springing up, and spongy patches of lichen here and there. We passed the night in much discomfort, harassed by chill wind and sleet.

20th June.—We set out early in the morning, which was fair and pleasant. The valleys through which we passed were covered with freshly springing grass. On either side of this level pasture-land arose a range of snow-clad mountains. At noon we reached Chu-kar pang-zang, the source of the principal affluent of the Rathong, where no pasture was visible, but only the rubble and boulders of a moraine, probably one of the largest in the Himalayas. We commenced our ascent through the boulder heaps, which extended about half a mile. I saw two or three marmots under a boulder, but failed to capture them. I cannot tell what they find to live on. We then arrived at the foot of the Kang-la peak. The sun was very powerful over-head. We longed for a fog to shelter us from the sun and to dim the glare of the snow, which became doubly strong and unbearable under the midday sun. The Lama and I put on our blue spectacles, while our coolies and guides painted their cheek-bones below the lower eyelid with black to protect their eyes from the glare. I put on my fur-lined coat, but after walking some distance I found the heat unbearable, and threw the coat to a coolie. Our guide walked first, and I followed his footsteps. He cautioned me to be careful, as a single false step might precipitate me into a yawning crevasse. On my right and left, at a distance of about one hundred yards on each side, avalanches were falling with a thundering noise, but we kept clear of them. After walking about a mile in the snow, we landed again on *terra firma*. Here, on a heap of stones, some flags were flying. The guide told me that this marked the boundary of Nepal and Sikkim. After resting for a few minutes we went forward. We had another field of snow to cross, about a mile in length, but not so level as the first. For a short distance we descended by an easy slope, but as we got further down the gradient became greater and greater, and the snow was slipping down in semi-fluid masses to a green gully, from which issues the Yamga-chu. Our guide told us that the Yamga river was a most destructive torrent, its waters suddenly increasing so as to damage bridges and kill travellers. This may be caused by the sudden melting of snow brought down into the gully. The river is worshipped by the Nepalese and the Bhutias.

I may observe in passing that the range, which commences from Te-gyab-la, and extends northward to meet the lofty Kangchan

peaks, with Kang-la as its culminating snow-line, separates the great rivers of Eastern Nepal, such as the Tambur, the Kosi, and their feeders, from the Rathong, the Kullait, and the Rumum, which flow through Sikkim and fall into the Teesta. It stands at right angles to the great range extending from west to east whose dominant peaks are Kangchan and Everest (Gauri Shankar). Another range runs parallel to the former on the east of Sikkim from Donkhyia towards the south-east. It is called the Thanka-la Range, and contains the Cho-la, Yak-la, Gnatui-la, and Jelep-la Passes, separating the basin of the Machu, in whose valley Chumbi lies, from that of the Teesta.

At length we came to an inclined plane with a gradient of nearly 30°. The guide helped me, and I got down safely. Our coolies slid down with their loads on their backs; one was bruised by coming against a boulder. Below this slope is the source of the river Yamga-chu, which flows into the river Tambur. All the rocks and boulders on this side of the Kang-la were of red sandstone, while in Sikkim most of the rocks are of silicious, calcareous, or granitic formation. After travelling more than five miles we arrived at a plain, where we were delighted by the sight of vegetation. This place is called Phur-pa-karpu. We followed the course of the river, along the banks of which were many small stone enclosures where travellers and yak-herds take rest. From Phur-pa-karpu we came to Tunga-kongma further down. Many cascades fell from the mountain slopes on our left. The valley of Tunga-kongma contains scattered bushes of rhododendron and other plants, besides a profusion of lichens. Yamga-tshal lies below the place where we halted. It contains many tall deodar trees, besides rhododendron, juniper, birch, and larch. The path was easy, but we were much exhausted. At dusk we reached the nearest cavern, where Ugyen Gya-tsho was attacked with bilious fever. Our guide cooked a little rice and prepared buttered tea, and we refreshed ourselves after the day's tedious journey. Next morning I gave the Lama a dose of tartar emetic, which afforded him some relief. We halted here for one day, and on the following morning recommenced our journey.

22nd June.—We set out early towards the north-east, crossed the Yallung river, a feeder of the Yangma, by a wooden bridge of deal planks and juniper logs, about thirty feet long and six feet broad; and then began to ascend the Tsho-chung-la, also called Chunjerma. The ascent was very steep for about 2500 feet. At noon we reached the top, where there are two small lakes, the circumference of the larger being not more than 500 feet. Between

the Yallung river and the Yama-tarachu (river) there are four ridges to cross. These are the Mirken-la, Pango-la, Senon-la, and Tama-la. The Mirken-la and Pango-la are the steepest; their heights must be between 12,000 and 14,000 feet. We did not take any boiling-point observations, but guessed them from the comparative changes of vegetation on their summits and slopes. After crossing these, at 6 P.M. we reached the beautiful village of Kambachen-Gyunsar (9500 feet),¹ which is situated in a romantic valley on the banks of a fine river, and overhung on three sides by steep and rugged mountains, covered with thick woods of rhododendron, juniper, deodar, and weeping willow. Our guide introduced the Lama to one of his friends, a rich *Sherpa* (Nepal Bhutea) farmer, who conducted us to his house. My Lama cap and dress, and especially my Aryan features, made the natives take me for a Pabu (Nepalese) Lama of Nepal; and instead of asking me who I was and to what caste I belonged, our good host made a low salutation and respectfully invited me to take my seat on a homely cushion made of yak-hair. Other people came to look at me, but none dared ask my name and nationality. Gya-tsho quickly perceived what was passing in their minds, and at once addressed me as 'Pabu Lama,' instead of calling me 'Babu' or 'Lama.'

23rd June.—At Gyunsar next morning we visited the Tashichoding Monastery, on the right bank of the Kangchan (Kambachen) river, which contains about eighty monks, besides a dozen nuns who generally reside in the village. The monastery is one of the finest and richest in Sikkim and Eastern Nepal. It contains a complete collection of the Kah-gyur (Buddhist Scriptures) and the Tan-gyur (*Shastras* or religious works). The Lamas wear their hair in flowing locks like lay people; they also wear long ear-rings in imitation of the early Indian Buddhists. They belong to the Nying-ma-pa or Red-HAT sect. The great Buddhist Lama (Lha-chen-chempo) who introduced Buddhism into Sikkim, entered Sikkim by this route, and established the Gyunsar Monastery. The Lamas of Pema-yang-tse and Kambachen Gyunsar belong to the same sect: their rites and observances are identical. Last year the head Lama of Gyunsar visited Pema-yang-tse and was well pleased with the reception that he met with. It is owing to this that they welcomed us warmly. Ugyen Gya-tsho and I made a present of a rupee each to the monastery, with due offerings to the presiding deities. In the evening we were invited to the head Lama's house, and entertained with *murava* and warmed buttered tea: boiled potatoes were also given in large quantities. It was the first time

¹ This height must be erroneous. Sir J. Hooker gives 11,380 feet.—D. W. F.

for many days that I had seen potatoes, radishes, and turnips. The head Lama gave us a lecture, exhorting us to have firm faith in Buddha and his teaching. Ugyen Gya-tsho begged him to favour us with his patronage, as we were strangers to the country and without experience of Himalayan travelling. He promised to give us all the assistance in his power, for which I thanked him. In my conversation with him I talked in Tibetan as well as in Nepalese. He too took me for a Pabu Lama. I did not go out of my way to tell them my name and residence: it was no business of mine to do so. I allowed them to think of me as they pleased.

24th June.—Next morning we were invited to a dinner given us by all the villagers. Mutton and potatoes were set in quantities before us, and that excellent thing for travellers, the *murwa* beer, was brought in large jugs. We sat in a circle with a bamboo bottle full of beer placed on a small low table in front of each. In the centre a large jug full of *murwa* was placed. We drank the refreshing draught through a reed about two feet in length. Different topics were introduced. I sat in a dignified style, with my legs crossed on a thick Chinese rug. I avoided speaking much, and made short replies to the questions frequently put to me. Ugyen Gya-tsho answered for me. I only expressed my appreciation of their kindness in complimentary language: 'La-la-so, thug-je-chhe' (Yes, honourable sir; great mercy). They also related to us their adventures in going to Darjeeling and the plains as far as Matigara haut, and into Tibet as far as Tashi-lhunpo. The question of closing the Jongri Pass to merchants, and of Singbeer's ambitious conduct, occupied a great portion of our talk. I was much struck with the singular spectacle presented by this dinner of the Sherpa people. Even after emptying two or three *murwa* bottles our friends preserved their usual temper. No one was drunk, although there were warm discussions, every one speaking in vociferous tones, and none listening to what was said to him, all being engaged alike in haranguing their neighbours. At 2 P.M. the meeting dissolved, out of thirty guests only three remaining. Our good host, the Lama, then brought three dishes of rice and mutton neatly cooked. I took little and left the greater part for our servants and guide. We made a present of a rupee each to the head Lama, and returned to our lodgings. At half-past three we were again invited to the house of Khapa, the image painter. We paid him the usual present of one rupee each, but took no food at his house.

25th June.—The next morning we were invited to the house of Omzeh, the second Lama of Gyunsar Monastery, who also received the usual present of a rupee. The villagers then formed a com-

mittee to settle the arrangements for our journey towards Tibet. They appointed one Phurchung, a Gelong (or monk) of Gyunsar, the strongest and stoutest man in the village, to serve us as guide. They also engaged new coolies in place of those who had come up to this place. The river on the bank of which Gyunsar is situated is called the Kang-chan, as it issues from the Kang-chan Junga peak, but the people told me that it was the Tambur itself.

At 7 A.M. we set out and followed the course of the Kang-chan. Our way was easy and pleasant, and the morning was bright. We walked through groves of *lhem-shing*, a tall juniper festooned with moss. At 2 P.M. we arrived at the base of a hill which looked at a distance like snow. As we climbed it we found that we were mistaken; the course of a torrent had been diverted, in consequence of which the top of the hill had slipped down and laid open a field of white rocks and sand. In the clefts and crevices of the stone I found large lumps of something resembling iron ore and also conglomerate masses of flint, with layers of felspar and films of talc here and there. I do not understand how iron ore could be found associated with erratic blocks of marble and sandstone, unless transported by torrents from the neighbouring ferruginous rocks.

I looked about for fossil remains, but time failed me, as my companions were leaving me behind. At 4 P.M. we crossed the river by a wooden bridge and entered the village of Kambachen Kang-pa-chan (13,600 feet; boiling-point 187°). At the entrance was a barley-mill worked by the stream, and then a long Mendang (pile of votive stones). On all sides of this beautiful valley we saw barley cultivation, each field being enclosed with a stone wall from three to four feet high, or with a wooden fence. Both at Gyunsar and Kambachen the houses are built of wood with gable-ends and roofed with long planks. No nails or ropes are used to fasten the planks to the rafters or to each other, but they are kept in their places by blocks of stone laid on them. The interior is far from uncomfortable; the windows are very small, and the houses consequently dark; but as the natives live chiefly out of doors, and always keep a fire lighted indoors, they suffer little inconvenience on this account. We here witnessed the grand offering made to the Kang-chan peak by the residents of Gyunsar and Kambachen. The firing of guns, athletic feats, and exercises with the bow and arrow form the principal parts of the ceremony, which is believed to be highly acceptable to that mountain-deity. The youth of Gyunsar vied with each other in athletic exercises; the favourite amusements of their elders being quoits, back-kicking, and the shooting of arrows. We also contributed our share to these religious observ-

ances. The scene reminded one of the Olympic games; and like good Buddhists, we too paid our obeisance to Kang-chan, the Indian Olympus. In the afternoon a messenger arrived from Yangma, with a letter from the frontier officer (Wallung Go-pa), intimating that he had started for Kang-ba-chan, and requiring the villagers to stop all traders with yaks and sheep from entering Tibet by the closed pass, the Chatang-la (JONSANGLA); that the Tibetan Government had forbidden ingress even through the Kangla-chenmo pass, which was an open pass, in consequence of the spread of cattle disease in Tibet. The head Lama, our friend of Kambachen Gyunsar, and the Peepon privately gave us this news, and requested us to start early in the morning before the officer arrived.

26th June.—We set out before the day dawned, and ascended the left bank of the right affluent of the Tambur. The way was good, with an easy rise. On our right lay Kang-chan, round whose base we skirted; to the left rose the snow-clad ridge, which is a prolongation of Kang-pa-chan. At a distance of about three miles from Kang-pa-chan we came to a waterfall far more majestic and graceful than the one we had seen on the southern slopes of Pao-hungri. Its water is said to be very sacred, and it is known by the name of Khan-dum-chu, or the fairy waterfall. The eight Indian saints, called in Tibet Rig-zin-gye, and the famous Tang-sung-gyapa, the Vyasa of the Buddhists, are said to have bathed in the water of this fall, and it is in consequence regarded as the holiest river in this part of the Himalayas. It precipitates itself in three unbroken sheets from the top; and, rushing finally over the rocks which project from the face of the precipice, it falls in a mass of foaming water among the dark and glistening rocks below. Just above the place at which we crossed, and where it empties itself, it is about 18 feet broad, and the height from which it falls almost perpendicularly may be estimated at not less than 1000 feet. The roar of the cataract deafened me for nearly two hours. The stupendous scenery of the peak from which it issues, the irregular disposition of the rocks through which it cuts its way, the immense height from which it falls, combine to make it one of the most sublime spectacles in the Himalayas.

We passed through many level valleys, whose quiet beauty contrasted with the sublimity of the surrounding hills. There were no trees to be seen, but dwarf shrubs with lovely flowers of various hues graced the slopes all round. At midday we took our breakfast at Ramthang in a yak-shed.¹ Setting out again we came to an

¹ From this point the Pundit's route seems to diverge from that of the Jonsong La.—D. W. F.

extensive pasture, about three miles in length and two in breadth, strewed with the bones of yaks. During the months of August and September the villagers of Kang-ba-chan bring their herds here to graze. The north of this tableland is bounded by lofty pinnacles of rock, and on the south and east flows a stream called Kameh-chu, an affluent of the Kang-chan-chu, whose course we had followed so far up. For a distance of about a mile it flows under-ground, and at length reappears opposite a cavern called *Pema-chan-kidemi*, where the key of heaven was concealed by Padma Sambhava, the Guru Rinpoche of the Tibetans. The stream is here very sluggish, its water carries a kind of clayey detritus of an opaque white. Close to this cavern there is a small mineral hot-spring called Men-chu, to which the people of Kang-ba-chan occasionally resort. It is held sacred, as Pema-guru, the head of the Red-hat sect, bathed here on his way to Tibet. On either side are mounds of rubble and boulders which mark a recent moraine.¹ There is no vegetation to fix them in compact masses. At one season they form continuous ridges, while at another they are found in detached groups, perhaps not found at all; all this being the work of snow in its semi-fluid form. At 5 P.M. we took shelter at a place called Jorgu-og, in a crevice of rock scarcely 4 feet long, 3 feet broad, and 3 feet high. The owner of the cave was a mountain fox (*Wamo* or *Wa*), the fur of which is highly valued. My guide told me that the musk-goat, the Nao (*Ovis ammon*), and the Himalayan antelope abound here. The last of these being sacred to the mountain deity is not hunted, but the others are. Jorgu-og is about 18,800 feet above sea-level, water boiling at 178°. The temperature at this time was 30°. I made tea, and we satisfied our hunger with Indian corn: we had no fuel to cook rice. As night advanced a chilly wind arose with a slight snow-fall. Ugyen Gya-tsho and I managed to sleep in the miserable fox-den, our coolies lying on the open ground, sheltered by my waterproof cloth and two umbrellas. The floor being uneven and stony, I awoke with pains in my back.

27th June.—We set out early after taking our breakfast, which this time consisted of ill-boiled rice. Our way lay entirely through boulders and erratic blocks several cubic fathoms in size. We could scarcely see any trace of vegetation. Here and there were spongy mounds and isolated patches of moss in the midst of bogs. Avalanches resounded on all sides as we advanced towards the snows

¹ The place is called Lho-nag-thang. At its bend flows a little stream called Chi-tsi-chu, and to the east of our path is the famous Pema-thang-kitsari, or the outer wall of Ne Pemathang, the fabulous courtyard of Kang-chan, where gods and saints dwell in great numbers. (Original Note.)

and caused us much alarm. We saw three or four tailless moles running beneath the rocks. My guide said that they subsisted on the moss growing in the bogs. We also saw birds, like larks, flying overhead, apparently on their summer emigration to Tibet.

We had now arrived at the limit of perpetual snow. To the right and left ran two parallel ranges of snow, between which we struggled on our upward way. After a time the direction of the ranges changed from north to north-west; and at the angle thus formed the valley was filled with heaps of snow piled in a conical form, the largest of which was not less than 50 feet in height. The whole scene resembled the billows of the ocean. After travelling for three miles in this region of snow I fell down exhausted. The difficulty of breathing, produced by the extreme tenuity of the air, and increased by the exertion of the lungs in an up-hill journey at a height of over 19,000 feet, together with the glare of the snow, which terribly tired my eyes in spite of the protection afforded by my green spectacles, reduced me to a wretched state. Lama Ugyen Gya-tsho, whose condition was worse than mine on account of his corpulence, sat down on the snow in despair. For half an hour we remained in this miserable plight. At length Gya-tsho promised to pay Phurchung, our guide, any reward he might ask if he would take me on his shoulders up to the next stage. Phurchung carried me to the nearest spur where there was no snow, about half a mile distant, and returned to fetch his own load. We again proceeded on our journey. It was six in the evening, and the cliff under which we were to rest was far off. I did not want to go on, but there was no large rock to take shelter under, no water to drink, and the excessive rigour of the frost and the biting wind made it impossible for us to lie on the bare ground. We again plodded on our way, and before we could walk a mile we were overtaken by darkness, although the glare of the snow helped us a little. At seven we reached a huge rock which rested on a solid bed of ice. The guide told us that the rock would not fall during the night, as there would be no melting of snow, but it would be better to start before sunrise. We spread our blankets on the snow, which formed a capital spring bed. Although I had eaten nothing on the previous day, yet I felt no appetite for food. I was thoroughly exhausted.

28th June.—Early in the morning we set out, surrounded on all sides by an ocean of snow. The sight of stones, not to speak of vegetation, would have been welcome to our tired eyes, but even such dreary comforts were denied us. The difficulty of breathing increased. Every few steps we lay down, got up again, again advanced a short distance, and again lay down on the burning snow,

which was here knee-deep on a bed of ice. Ugyen Gya-tsho walked on cheerfully, but not so with me. My knees were nearly paralysed, and my legs refused to work. In this deplorable plight I struggled up the slope of Chathang-la (JON-SANG LA)¹ when my good friend (Phurcung), moved with compassion, came to my assistance. He left his load on the snow, tied his long spike horizontally to his girdle to prevent his plunging into the drifts, and took me on his back. I gave him my spectacles, and sat without sense or movement, and with closed eyes, until I reached another field of snow about a mile from the foot of Chathang-la (JON-SANG LA). The fresh snow was here not more than nine inches deep, and I managed to walk, though with great difficulty. Phurcung went back to bring up his load, which was nearly buried by the falling of snow. The sun, which had oppressed us in the midday, now disappeared behind the western range as we began to climb up this terrible slope. At last we came to the principal La, on the other side of which we were to take shelter. We toiled up it with extreme difficulty; our feet slipped, and we constantly rolled down. Phurcung cut steps with his *hookrie* (Nepali knife), and dragged me up with his hands. The fall of snow increased, and we were apprehensive of being buried alive. However, at six we reached our cavern, the interior of which was more comfortable and spacious than that of the previous night. Our guide informed us that the most difficult and dangerous portion of the pass had now been crossed, and that the rest of the way would be comparatively easy. In this miserable fashion did I cross the famous Chathang-la (JON-SANG LA) into Tibet, the very picture of desolation, horror, and death, escaping the treacherous crevasses which abound in this dreadful region. We spread our blankets and lay down benumbed, as our cell was carpeted with snow, and our clothes wet through with the drops that leaked through the clefts in the rock above. It was impossible to boil water to determine the altitude. There was no fuel, nor were we in a position to do any work whatever; but from the nature of the ascent from Pang-phe-kung and Jorgu-og it is probable that Chathang-la is 2000 feet higher than Jorgu-og, and not less than 20,000 feet above the sea.

29th June.—Next morning we set out very early and began to descend the La. After six hours' hard travelling we descried land with patches of brownish vegetation and scattered snow. At 1 P.M. we reached the bank of a sluggish river which makes its way

¹ Lit. མདོ་རྒྱ བྱାନ བྱା ། *Mdsod-gsañ La*, the Pass of hidden treasures, which has lately been crossed by Mr. Douglas Freshfield, F.R.G.S., and declared by him to be over 21,000 ft. above the sea-level (13th Nov. 1899). (Original note.)

through erratic blocks and boulders. From this point we descried for the first time the country of the sacred Bodhisattvas, and shortly after arrived at a slope on which there was verdure. This place is known by the name of 'Gyami-thotho,' the place where the Chinese General (probably Sund-Fo), during the war with the Goorkhas, erected a stockade, and on his departure swore to keep the Chathang-la (JON-SANG LA) Pass closed for ever. Having crossed Gyami-thotho, we came to another large river, whose left bank consisted of a steep and barren ridge of sand. This was the Zemi river, which drains the northern slopes of Kangchan-junga, and falls into the head-waters of the Teesta river. There was not a single blade of grass to be seen. For a short distance we followed the course of this river to the south-west, and arrived at a place near which we saw herds of yak grazing.¹ Our guide was terribly afraid of being detected by the Dokpas, who have charge of the Pass, and who in return for their services are authorised by that Government to rob all travellers who venture to cross it. He was aware of this all along, but said nothing to us about it. Our passport would be of no help to us, as we had taken a very imprudent and ill-judged course. The Dokpas on the south and the Tibetans on the north of Chorten Nyima-la have made common cause to keep the pass closed to travellers of every kind. We therefore concealed ourselves in a cavern and did not come out till dusk, when we quietly crossed the river, which, with its boulders and sandbanks, was more than a mile in breadth. The stream itself was divided into three impetuous torrents. We then climbed a steep and high hill, and reached the southern flank of Chorten Nyima-la. This in the moonlight appeared to be an extensive tableland, on the right and left of which towered two snowy ranges. There was very little snow on it, but the peaks presented a dead white appearance without glare. We spread our blankets on the bare ground in the moonlight, and spent the night in a sound, refreshing sleep.

30th June.—In the morning we started. Our path though tedious was not steep, but we were exhausted by hunger and thirst, as we had been without food for the last three days. After travelling eight miles we reached the southern foot of the Chorten Nyima-la. It was a glorious sight. Bristling cliffs of barren rock, whose crevices were filled with snow, crowned the top of the Pass; and the azure sky of Tibet peeping behind the snow-capped crests, and the green-blue lines of glacier that intersected the snowy slope, combined to give a picturesque, yet weird, aspect to this most

¹ I fancy the points of the compass are wrongly given. See the reproduction of the Pundit's Map on p. 301.—D. W. F.

stubborn and charming Pass. The rocks appeared like gneiss and dark granite. I climbed it at its steepest part with the help of Phurchung. We suffered little from the rarefied atmosphere, and within a short time reached the summit of the Pass, from which I enjoyed the view of the lofty plateau of Tibet. To the extreme north billowy ranges of blue bounded the cloudless horizon. I laid myself down near the pile of stones which marked the top—the 'Lap-tsa' or 'Obo' of the Mongols, and the sacred 'Stupa' of the Indian Buddhists. Many flags attached to stout reeds were flying from the top of the pile, and our friend Ugyen Gya-tsho added some for himself to the number. After a rest of half an hour we began our descent to the Tibetan plateau, and at 3 P.M. arrived at the bank of a beautiful glacier lake at the foot of the Pass. It looked like a block of turquoise amid the surrounding snow. The sun was descending to the Indian horizon, and mellowed the air with its rays. The glassy water of the lake reflected each mountain and peak on a background of fleecy skies. The lake is of an oval shape, about a quarter of a mile in length by about 250 yards in breadth. From it issues the Chorten Nyima river, a turbid stream, whose course we were to follow. After refreshing ourselves with Indian-corn and sugar, we began our downward journey. On both sides the mountains were barren without the least trace of vegetation. The contrast between the scenery of these bleak hills and those of the Cis-Himalayas filled with luxuriant vegetation was very striking. In our descent we were in constant danger of being seen by the guards stationed at the Chorten Nyima Monastery. At times we hid ourselves under boulders, and at others fell flat on the ground, terrified by the sight of stones which we took for yaks or ponies. After travelling more than five miles from the lake we came to the place called Chorten Nyima or 'chaitya of the Sun,' where there are a few flat-roofed stone cells for pilgrims and monks, and long mounds of inscribed stones. This chaitya is one of the ancient monuments erected by the early Indian Buddhists. Pilgrims from the whole of Tibet, and even from Mongolia and China, annually resort to this sacred spot. Here we found a number of small shrubs with sweet-scented flowers of a violet colour. Phurchung crept quietly towards the monastery to see if there were any persons in it. He saw nobody outside, and returned with a bag full of cowdung for fuel. At six we cooked our rice for the first time at a height of 17,000 feet, the water boiling at 181°, and took a hearty meal after our fatigue. At dusk we recommenced our journey, our object being to reach the main track that connects Tengrijong with Kambajong. We abandoned the direct and shorter road, so as to

conceal the route we had come by. Had we been detected we should have been sent to Kambajong as prisoners. The weather was fine and the sky clear; and the flowers of a thorny shrub that abounds here emitted a delicious scent. The river with its sandbanks on either side was a quarter of a mile in breadth. The main channel was about forty feet broad where we crossed. In the North Himalayan ranges we had seen many varieties of stone, such as mica, gneiss, and granite, but no slates. Chorten Nyima and the ranges subordinate to it abound in slates of different sorts, of which I picked up many specimens as I went along. I noticed one whose dull black colour, compact quality, and schistose nature at once distinguished it from ordinary black clay-slates. Clay-slates were abundant, and among them I observed the kind called whet-slate, known by its greenish-white colour; and also the talc-slate of a pure green colour and greasy feel, about which I had read in books. As I wanted to see the beds from which school slates are quarried, I walked on slowly. I saw some specimens washed down by the feeders of the river, whence I conjectured that the beds lay higher up. I also found an immense quantity of what are called roofing slates. I saw many other kinds of clay-slates of a variety of colours. On both sides of the river the hills are filled with slaty beds. I imagined that the green turquoise, so much prized by the Tibetans, was to be found in these beds, but I did not meet with any. At midnight, after crossing many hill-streams, we reached the grand track near the village of The-kong (also called The-bong). Here we halted and enjoyed a sound sleep wrapped in our blankets under the open sky. To the south towered in the moonlight numberless snowy crests of the Himalayas, forming a background to these romantic steppes. On our left rose the hills above The-kong; and in front the subordinate ridges of the Central Tibetan Himalayan range.

1st July.—We got up early and took bearings of the adjacent villages of Sar and Tinkijong, which were at a distance of about eight miles to the north-west. Recommencing our journey, we crossed the Chorten Nyima river for the second time. Before advancing a mile we heard the tinkling of bells, from which we inferred the presence of travellers. They were four in number, and were proceeding to Sar. We were asked many questions—who we were, where we came from, and whither we were going. Phurchung answered for all of us. They took me for a Nepalese pilgrim or Serpa Lama, as they had met me on the Nepal road. The village of The-kong lies on the right bank of the Chorten Nyima river, on the lower slope of a range of treeless hills stretching eastward. The

village is surrounded by an irregular stone wall about eight feet high. The houses have all flat terrace roofs, with a flag at each corner, the corner posts being joined by strings carrying pieces of rag and paper inscribed with mantras. A few shrubs and flowering plants grew near the houses, and beyond lay the barley cultivation, irrigated by canals cut from the main stream. At our back, to the furthest west, we saw the group of villages known as Sar and Tinkijong; and to the north-west lay Dobta, the Sikkim Raja's Tibetan estate.

CHANDRA DAS'S JOURNEY TO LHASA

The succeeding narrative is that of Chandra Das's second journey, in which he reached Lhasa in 1881. This Report has, after being edited by a well-known Tibetan traveller, the American diplomatist, Mr. Rockhill, been lately issued in book form by the Council of the Royal Geographical Society. Mr. Rockhill, however, naturally did not do his work from a mountaineer's point of view. Anxious to preserve space for full details as to Tibet itself, he cut down the Himalayan narrative somewhat closely, and further changed it by modifying many of the more characteristic expressions of his author. For me there is an agreeable freshness and picturesqueness in a narrative of mountaineering told by a Bengalee Babu in his own exact words. I like to know his frame of mind, the legends and fairy tales that to him were real, the dangers he imagined as well as the perils he really encountered. I believe many English readers will find the same curious fascination that I have in the Babu's unexpurgated description of how he crossed the snows on his way to the Holy City, and perhaps be reminded, as I have been, of the Anglo-Saxon pilgrim who complained of 'the bitter blasts of glaciers and the Pennine army of evil spirits' that guarded the snows of the St. Bernard and the road to Rome.

I have omitted the description of Chandra Das's journey from Darjiling across Sikkim, and taken up his narrative at the point where he entered Nepal by crossing the Chumbok La, a gap in the Singalela ridge south of the Kang La Peak. In conjunction with the Semo La this forms an alternative route to the Kang La from Sikkim to the Yalung Valley, and is generally used when snowfalls have rendered the latter impracticable. It is by this route that the authoress of *The Indian Alps* and Major Waddell penetrated for a few miles within the Nepalese frontier. Neither party, however, seems to have advanced beyond the Semo La.

D. W. F.

21st November.—In the morning there was a brisk movement

among the coolies, packing up their loads and talking to awake me. I was not asleep, and I heard quietly what was going on outside from within the folds of my blankets. When I looked out, my eyes were dazed with the glare of daylight. The skies were cloudless and of the deepest blue, against which on all sides the snowy summits of numerous peaks pierced the vault of heaven in indescribably grand array. The sunlight, though not yet visible in the valley, had already gilded the snow-clad tops of the giant peaks. Removing the upper blanket, which had become encrusted with slight snow during the night, our guide requested me to get up soon ; 'the weather is tempting, and we must cross the La as quickly as possible.' I asked him to give me some tea. He said all the utensils and cups, etc., were packed up and despatched, and the coolies having gone some distance could not conveniently be called back. What disappointment I felt, and how exhausted I was, my good servant failed to understand, but judged from my previous day's feats that my little thin frame possessed extraordinary powers, and knew not that my strength was unequal to the task before me, and that I walked only because I could not help walking.

I reproved him for his inconsiderateness in thinking me as strong as himself. He begged pardon, explaining that he thought the weather being good in the morning would most probably turn bad in the evening, and that to be able to cross the second snowy pass early in the day would be far more safe. Dressed very lightly, in order to be able to ascend quicker, I set out on my journey, following his footsteps. The ascent was at first not difficult or rugged, and so I walked with some cheerfulness, often asking to be shown the exact position of the pass we should have to cross that day. There were a few birds resembling sparrows, which twittered as they flew, issuing from the clefts of rocks hanging over our head. We crossed saddle after saddle of mountain ridges, and so had numerous ups and downs ; but of that we thought little, for to ascend or descend five or six hundred feet was *now* nothing to us ; it was the sight of abrupt ravines and gorges five to six thousand feet deep that made us uncomfortable and full of dismay. Walking in this manner for a few miles, I again felt exhausted. Our guide observing this, said the pass was not very far off. 'There it lies, we shall soon reach it.' Encouraged by his words I walked on again, but arriving at the foot of what he called the La, I found that it had gone further up !

After a mile's journey further up, I found it to be no La at all, but a passage resembling a gateway lying between two rocky cliffs. Here commenced the region of scanty vegetation that invariably lies at the foot of the limits of the lower snowy zone. Here our coolies

had halted, and having collected some juniper twigs on their way up had lighted a fire, which, when I arrived, smoked very much. They prepared me a cup of tea, with which I moistened my mouth, dry and bitter with thirst. I ate some Indian corn, as our biscuits were consumed all but one tin. The fuel having burnt out before any snow could be melted, the coolies failed to quench their thirst; however, they licked up the water dropping from the melting ice in the clefts of rocks; some picked up snowflakes and ate them, though with difficulty. At about nine we resumed our journey, passed various formations of snow and ice in their several stages of congelation and melting. The ice was all that we dreaded, for no feet could rest on it without slipping down. The hard snow was welcome to us, being pleasant to walk over. The heels scarcely sank more than a few inches in snow. The icy regions lying at the lower limits of the snow were slippery in the extreme and most dangerous in consequence of the steepness of the slope.

After a couple of hours' hard and tedious ascent over different stages of melting snow, we reached the pass, which was protected from the south and west by a very rugged cliff resembling the out-spread wings of an eagle both in colour and shape, and inspiring me with a strange feeling of dread. Sitting near the Lap-tse, I enjoyed one of the grandest scenes I had ever beheld. Though very tired and unwell, I was much impressed by the grandeur and sublimity of nature. No poet could adequately realise nature's exploits in this part of the world. No pencil could delineate these romantic scenes. I thought for a moment that the sages of old were wrong in their ideas of heaven. When one looks up from below, he naturally conceives paradise to be somewhere on high, but on reaching such lofty altitudes, where breathing is a natural and unsurmountable difficulty, I could not but smile at the ignorance of those sages in their ideas of heaven. They must have been deluded with the grandeur of the void that encompasses the universe, to risk the situation of their paradise in such a desolate region. From my position here on the top of hoary Semarum, I saw paradise below, while above me were nothing but eternal snows where death alone can dwell. The hanging glaciers, the towering pinnacles, the rushing snow-drifts, the thundering avalanches, the yawning crevasses, the splintering of rocks from frost, and above all the cold,—all were but various appendages of the Lord of Death. He chose to make his abode here, to rule the skies as well as the world below with his thunder and rain. Verily might one say that the sages of yore in their ideas of the celestial regions were not happy; for when, after encountering immense hardships and endless privations, one arrives

at the loftiest regions, he is utterly surprised that paradise should have been sought there.

Legend has it that many years ago, at this very pass, a certain cunning and designing Limboo of Tambur Khola had secretly concealed under the rocky ground a red earthen jar filled with charcoal, with the dishonest object of establishing his heir's right over the whole easternmost part of Nepal, called Yangoro, which also includes Singlee-la. Before dying, he left a written will bequeathing all this land to his heirs. A few years after a quarrel took place between the Lamboo of Tambur Khola and of Yangoro, which lasted for nearly twelve years, during which time the Gurrungs were the chief sufferers, as their cattle were robbed by the Limboos of either party who disputed the possession of the land, both parties claiming rent for pasture lands. The great dispute was at last settled by the Chaubisi Raja, who ruled at Bhatgaong, in favour of the Yangoro Limboos. The trick played by the cunning ancestor of the Tambur-Khola Limboo was found out, the Raja agreeing that the earthen pot which the Tambur man dug out from the Semarum La must have been concealed with no other view than that of falsely claiming the Yangoro lands. The Yangoro Limboos therefore hold this place as very auspicious.

The forked cliff of Semarum proudly piercing the blue space stood frowning on us with its numerous brown ribs of rock, now bare of snow. To our north-west, at a great distance, I saw numerous snowy ranges, said to be the Shar Kambu Mountains, whose tops were wrapped in clouds. I got out my field-glass from my bag and feasted my eyes on the splendid scenery of the grandest and loftiest of the world's mountains—Choma Kankar (the lord of the snows), which overhangs Lap-chyi, the famous mountain of great Buddhist sanctity. The highest of the three peaks that were visible, Choma Kankar, reposing in calm majesty in the shape of a rounded dome, rose high above all, and the two others that stood side by side, like his ministers, resembled blunted cones. They were resplendent with the rays of the sun, the shadows being cast to the north-west. To the north-west of these were the Sharkhambu Mountains, which, gradually enveloped with ascending fogs, soon vanished from our sight. To the west, beyond an immensely wide and stupendous chasm in the valley of the Tambur, were the valleys of Laylep, Yallung, Dhunkota, and Tambur, all of which were faintly visible when pointed out by our guide's finger, for there was a haze, so that a dark blue colour overspread all the scenery.

After half an hour the wind blew from the west, making it inconvenient to take the height by the hypsometer, as the flame was

several times blown out. However, by surrounding the instrument with a screen, we obtained the boiling-point, which stood at 184·5°. We took bearings of the passes of Shingsa, Takpola, and Wallung, and other important snowy peaks. These finished, we resumed our journey.

After walking about fifty yards, we found ourselves entangled in a maze of glaciers and trackless snowy surfaces. The glacial furrows were the natural tracks which an unwary traveller would follow; but those furrows were in some places very deep and treacherous on account of the crevasses formed on the side of huge boulders; so that when one follows a furrow he descends into an abyss surrounded by walls of ice without any accessible passage out.¹ Our guide brought all his past experience of mountains to bear at this critical place, and yet failed to come to a satisfactory solution. We all consulted together, and each advised the others to follow some particular glacial furrow. At last I thought it best to give preference to our guide's suggestion to follow the track which he, disengaged of his load, would make for us. He started the other coolies, dividing his own load among them. After wading for about twenty yards, he found himself half buried and scarcely able to get out. He had sunk to the waist, and snow filled his sleeves and the great pocket at his breast. I turned back at his signal, without trying to go to the right or left of our track, and retraced my footsteps. After ten minutes' struggle Phurchung succeeded in getting out of his difficult position. Although my other coolies tried to persuade me to follow this or that track, yet none came forward to take the lead. Observing Phurchung's discomfiture, I made a different though dangerous resolution as to our *modus operandi*. I begged them to let me go ahead, and to follow me when they saw I had obtained a firm footing on the snow. First of all our guide drifted his huge load and watched which way it went. This having plunged down where the track might lead it, I girded up my clothes, and holding the edges of the lower part of my robe, slipped along. Instantly I was carried down, and hurled to a depth of more than a hundred feet below. There I brought myself up by fixing my elbows into the snow like a brake, at the same time lifting my hinder part a little. Ugyen followed me in the furrow I had made, and would have dashed on me with his whole weight, had I not taken the precaution of turning myself to one side of the track. I then embarked on a second slide down a still steeper snow-slope, and was at once shot forth to a greater distance than before. In the third slide we met with slippery ice rather than snow crystals, and consequently got pains in the back, caused by friction on the harder

¹ Major Waddell reports there are no glaciers, and therefore no crevasses properly so called on this route.—D. W. F.

substance. When there intervened a flatter surface, a slide became inconvenient, and we commenced wading with great difficulty. We made very little progress, as it took much time to draw up our legs from the foothold two or three feet deep in snow. Here my men tried the expedient of dragging their loads after them by strings tied to the edges of the baskets, as they found it impossible to wade in the snow with such heavy loads as they carried.

I saw the footmarks of some wild animals, such as the wild rabbit, and the snow leopard, and also of a kind of bird called *chang-lung*, probably the snow pheasant. I really wondered that wild animals should have been able to preserve the equilibrium of their bodies so well as to stamp the snow uniformly all over, for the animal or the bird had no doubt to rest its weight on its footmarks. Why these should have remained uniform, while ours were deep and irregular, I could not understand. For a considerable distance on the flat icy slope I followed the footmarks of a snow leopard, and at last I found I was being led the wrong way.

Phurchung and Ugyen had ascended a ridge on my left, while I laboured down the deep gorge. Although abandoning my first track, I soon overtook them, yet I found they were equally mistaken in their route. Our intrepid guide now mustered all his knowledge of travelling in snow and glacial regions. When we saw it was past three in the afternoon, and that we had to make a long journey still to reach the next stage—Namga-tshal—our countenances were overcast with dismay and anxiety.

Our progress was very slow. There being no water for our men to quench their thirst, they chewed half-melted lumps of snow. At last our guide made a detour round another ridge which lay to our right. After half an hour's ascent we found ourselves on the top of a huge, snowless rock, about forty to fifty feet high. The coolies descended down this with wonderful agility; I took a short rest, sitting down on a slab. There were loose stones and debris brought down by the melting snows, which we were warned by our guide not to throw down carelessly, as they would crush the coolies in their descent. I descended the steep side of this block of rock, being helped by one of the coolies, who held fast my right arm and the girdle of my robe. Our bundles of clothes and other articles were plunged down as before, to be brought up short at the bottom of the snowy gorge, and I again prepared for a series of slides. This time the slopes were steeper than ever, but their end was visible, for which reason we were bolder than before, as there was no crevasse to devour us at the bottom. Although in one slide I rushed down unable to check my motion by my elbows, yet fortunately a projecting boulder

covered with snow arrested me in my headlong progress. The third slide, which took me to the pit where our troubles in the snow were to end, I really enjoyed as if it were an amusement, and we all laughed at each other's achievements.

Arrived at length at the very bottom of the gorge, I stood on a turf by the side of some rhododendron bushes, and shook my garments to clear myself of the snow which had penetrated inside my trousers and inner shirt. Here my watch dropped down and the keys with it; one of my coolies picked them up shortly after. At 4 P.M. we all reached the region of stones and vegetation, and our hearts were filled with the joy of a successful termination. Cheerfulness brightened every one's face, and especially mine.

After a short rest we again resumed our journey along the gentle rill which leaps down from here with a pleasant murmur. It is called the second head-water of the Kabilée, although the part of it which we followed empties itself into the Namga stream. Half an hour's quick journey along the fragrant turf margin of this glacial stream brought us to the Namga river, our old acquaintance, which rises from the Kangla Nangmo Pass near Jongri.¹ We recognised the old track, which we had traversed in 1879, and had a distant view of the Kangla Pass. The snows on either side of the Namga river showed us that the Kangla Pass was equally inaccessible at this season of the year. Snow had fallen several miles below it in October. The autumn fall of snow is called *shingsa pahmo*, and affects the lower altitudes of luxuriant vegetation. Our way was now easy, and overgrown with dwarf rhododendron and bushy juniper, besides other new varieties of shrubs, the sweet scent of which I enjoyed as I passed. A kind of prickly shrub with red fruit was abundant, and often its thorny twigs caught in our garments. There were several kinds of mosses and lichens growing on the sides of the river and on the slopes of the mountains on either side. The Namga stream was also frozen, large ice floes being in motion where the stream was narrow; but the greater part was covered with snow, underneath which the water forced its way down-stream. Towards our front, but a great way off, the pine-clad flanks of Juona (Jannu), through which the Yallung rapids threaded their silvery way, were set on a blaze of fire by the sun now quietly setting in the west. I wished much to get into the sunshine, but our way seemed endless; and as we advanced, the sun's rays ascended higher and higher along the mountain flanks.

¹ It is doubtful if the Kangla Nangmo is a pass at all. It appears rather to be the name given to the plateau N of the Kang La, which sends down glaciers on both sides of the ridge. — D. W. F.

Our way now lay between two snow-covered ranges, the lower flanks of which were densely covered with rhododendrons and pines, chiefly the *dungshing* or cedar. To follow the meandering Namga was a tedious affair. We plodded on till at 6 P.M. we reached the extensive flat of the Namga river, called Namga-Tshal (the grove of joy). It was overgrown with rough pasture now withering, and also with thickets of various Alpine trees and shrubs.

Passing through several pasture lands, and crossing the Namga river by a wooden bridge, about forty feet long, constructed after the East Nepal fashion,¹ we arrived at the halting stage under the wide-spread branches of a high cedar. There were marks of other travellers having spent the night at its foot, such as the fireplace, the collection of fuel, and the bamboo water-vessels. We cleared the spot of all the rubbish and spread rugs on the ground. To protect me from wind and snow my coolies erected an enclosure of rhododendron twigs round my bed and covered it with a sheet of cloth. Phurchung, who had been for several days entreating me to be allowed the use of my fowling-piece, now quietly took it and asked if he could use it. I gave him leave, and said that he must bring me a pheasant. It was dark when he entered the thicket to shoot any solitary *chamgdang* (pheasant) that might fall in his way, but after firing two cartridges he returned without any game. Our coolies busied themselves with collecting fuel, lighting a fire, and fetching water. After taking a few cups of tea and a dish of rice, I stretched my length on the rug, and was soon asleep.

22nd November.—The morning was bright and clear. My fatigues were to some extent allayed by the genial climate of this grove, and with a mind released from the fear of snow I lingered under my blankets. There was a gentle breeze, and the whole grove appeared enlivened by the cries of pheasants and different species of the bird called *abla*.

Lha-tsun, the great Buddhist patriarch of Sikkim, I was told, when first coming to visit these Himalayan regions, spent a few days here, struck with the fine scenery and the spaciousness of the valley. He performed the inaugural rites of the work of converting the Lhopas. The fatigues of his long and perilous journey from the northern solitudes of Tibet down to this place had broken down his health, but the few days that he spent here greatly restored him, not only by the delightful scenery of the place, but more especially by the comforts that he obtained here, both religious and physical. After the termination of his toils he called it *Namga-Tshal* (the grove of joy). He left directions for the guidance of Buddhists of his

¹ That is on the cantilever principle like Swiss bridges.—D. W. F.

school to consider this place as very sacred, and to perform their annual inaugural ceremonies at the cavern where he had spent a few days. We had the self-same cavern in view from our halting place, and were told that the Sikkim and East Nepal Buddhists even now resort to this place occasionally on pilgrimage.

I got up from bed at 7 A.M., and finishing the accounts of the previous day in my scribbling diary, sat to breakfast, which consisted of tea, rice, and some red pulse brought from Darjeeling. Dressed as usual, I started for the day's march. Phurchung muttered his sacred *mantras*, invoking the saint Pema-jung-ne and his two wives to help us on our journey. We now walked with cheerfulness, the pleasant recollections of the scenes of our former journey becoming more and more vivid as the boulders and precipices reappeared to our view. Thickets of *deodars*¹ and other pines, black through age, were perched over the steep slopes, from the deep recesses of which crowed the mountain pheasant. There were one or two Limboos carrying down loads of dye-creepers.

After crossing two streams, the margins of which were somewhat swampy, we ascended a short way up-hill through the thickets of rhododendron, where numerous green pheasants were picking the berries. Ugyen Gya-tsho could not resist the temptation of shooting some: he shot at several but missed them. I was asked to walk noiselessly so as not to stir them. At last one unfortunate pheasant was hit, but it flew to some distance, and Phurchung's brother chased and captured it. I arrived on the bank of the Yallung river, which unceasingly washes down the glacial debris of the giant Juona, which stood to our right unspeakably grand and in stupendous glory, its head shooting to the skies. There was a wooden bridge of cedar-logs and silver-fir planks on the river, which we easily crossed. The grove through which we then passed for a while made me forget that I was travelling in the mountains. There was a sluggish stream filled with leaves of trees and twigs, and its course overgrown with creepers.

Phurchung and his brother now arrived, brimful of exaltation at having killed one pheasant after several fruitless shots. They showed me the poor bird, which was just breathing its last. It was of the colour of the green parrot, with spurs on its legs and a deep, thick red line round its eyes. The legs and toes resembled those of the domestic cock, which in size it much surpassed. Shortly afterwards Phurchung and Ugyen left us, telling me to proceed slowly, and that they would presently overtake me. So with only one coolie I clambered up the slopes of the lofty Choonjorma. The way was very

¹ *Abies Brunoniana*? I infer from Hooker there are no deodars here.—D. W. F.

steep; besides we had taken the wrong way. Having had a somewhat heavy meal, I found much difficulty in ascending rapidly, and took rest, sitting in a reclining posture on the trunk of a large tree which with its rope-like hanging twigs swept to and fro in the wind. My coolie gave me some berries to eat which he had plucked from the thorny shrub growing by the side of the road. A few minutes after we were joined by Phurcung and Ugyen, who had failed to shoot any more birds.

After a short march the difficulty of ascent increased. I now resolved not to take rest by sitting, for when I did so, I felt a languor in my knees which disinclined me to get up and resume the journey. I had got pretty well habituated to mountaineering, in consequence of which I hardly suffered from quick and frequent breathing, and my heart now beat less and my lungs were less exhausted by the up-hill journey. The coolies, who had to ascend with heavy loads on their backs, gasped like ponies. When, after climbing two or three hundred feet up-hill, they stood supporting their loads on a short stick which they carried in their hands; I too rested standing. After ascending about 1000 feet along the middle flank of Choonjorma, we reached the top of a huge rock, on which I sat for a while to get a view of the spacious grove of Namga-Tshal, situated between the Yallung and the Namga rivers, and extending as far as their junction. The two streams wound along their silvery way amidst the dark groves of tall silver firs, bleached juniper trees, and several kinds of rhododendrons. Deep, gloomy chasms yawned below to our left and right, and the great grove of Namga-Tshal seemed hemmed in on three sides by cragg' cliffs of great height. Their wild appearance, here and there broken by torrents carrying down landslips of large dimensions, and presenting a chalky appearance from a distance, was very impressive and awful. The more we climbed up, the less we perceived the noise of the torrents, and the roaring of the Yallung river now sank into a faint murmur. The abrupt height of Choonjorma, its isolation from other mountains on three sides—south, east, and west—and its rounded rocky appearance, compelled us to ascend it with feelings of the awful and the sublime. Up to this height we had not met with any snow, and our hearts palpitated with the fear of again meeting with snow on the summit of Choonjorma. We still heard the cry of the pheasants and other mountain birds which love to make their nests in the hollows and crevices of the gigantic rocks of these stupendous precipices.

After a hard climb of half an hour, we arrived at the top of a flat rock, the lower sides of which were overgrown with a kind of thorny creeper with bunches of berries, some red and ripe. I asked the

coolies to take rest for a while at this place, and myself opening Phurcung's load, took out the field-glasses to enjoy the superb scenery of the surrounding mountains. Looking to the south-east the eye failed to follow the endless labyrinth of the mountain valleys through which threaded numerous torrents. There were no mists, nor any thick, hazy atmosphere to limit our view. On our right stood Cho-kangchan Juonga, receding somewhat towards the north-east, with its dome-like conical head reaching the sky, but overtopped by the great Kangchan and others to the further north and east.

The grandest and the largest moraine on this side of the snowy range presented itself to our view. The huge white boulders, called in Tibetan *Kang-se*, which were thickly scattered over the place, the different glacial furrows¹ which intersected this moraine laterally, and the rock-slips caused by the combined action of avalanches and glacial currents were the most remarkable features on the western slope of Cho-Kangchan. For a while I mistook the whitish brown boulders for snow in the shade, but on close inspection with the binocular I became convinced of their being nothing but rocks, though at such extraordinary heights. That there should be rock-covered moraines free from snow at about eight or nine thousand feet above the place where we stood, while comparatively lower altitudes were entirely covered with snow, was a curious phenomenon. There were patches of verdure visible just below the snow limits. A few hundred (probably a thousand) feet below the green spots were woody slopes.

Phurcung here told me that the yaks of Yallung Village in August and September advanced so far up as to graze in the green patches we saw, just at the foot of Juona. In the woody solitudes lower below, on the waist of this romantic snowy mountain, was seen the monastery of Dechhen Rolpa, with six monks, famous for its consecration to Cho-Kangchan. The head Lama of Dechhen Rolpa, who is a friend of our guide, is named Jigma-Gya-mtsho, or 'the fearless ocean.' He is now aged fifty, and by the grace of Cho-Kangchan will, it is believed, live an unusually long life. His predecessor, named Jigma-Pao, is said to have by dint of his saintly character visited Na-Pemathang, the most sacred and secret sanctuary consecrated to Kang-chan-Juonga. At Pemathang, according to our guide's narration, Jigma-Pao met seven Lepcha couples, who cultivate the excellent soil and raise luxuriant crops of rice, Indian corn, and *murwa*, and live in plenty throughout the year. I was about to

¹ Chandra Das calls any rocky slope a moraine; his 'glacial furrows' are probably secondary glaciers.—D. W. F.

believe in the story of our friend, but when he proceeded to say that these seven couples beget no children and never die, I took the story for what it was worth. Pemathang is the paradise of the Lepchas, from among whom up to this time only seven happy families have succeeded in entering it. To these dwellers of paradise Pema-Jung-ne, the Dinghsene of the Lepchas, makes himself visible on the tenth of every lunar month. Jigma having succeeded in penetrating into this mystic abode of the pious Lepcha patriarchs, is given the name of Pao, or 'the dauntless hero,' by the Buddhists of this part of Nepal. Last year a native of Yallung penetrated into Na-Pemathang, situated between the Cho-Kangchang and Juonga. He was enveloped in mists, and although he saw forests and pastures, he failed to see any trace of human abode or cattle, and encountered immense difficulties from snowfalls.¹

The village of Yallung, which is situated about three miles to the west of the monastery of Dechhen Rolpa, was not clearly visible from the place where we stood. It contains twelve families, who spend their summer in tending yaks at Yallung, and their winter at Yanku-thang in the Valley of the Kabilée. These twelve families, consisting of about thirty-five souls, are now under Lapa, the headman of Yallung, a friend of our guide. The view into the Yallung gorge, overhung by the grand mountain, was unspeakably grand, and held me chained to the spot until I found my companions had resumed their journey, and my guide stretched his hand for the binocular to put it into his big package. Reluctantly I followed him after a parting look at the scenery. After an hour's ascent we left the zone of tall trees and arrived at the rocky waist of the mountain, when I guessed that the two small lakes called Tsho Chhung Donka were not far from us. Shortly after we reached the eastern lake. I at once went to the edge, and put my hand into the water for a draught, when I found it solid and hard as stone! The lakes were all frozen deep, and under the glossy layers were visible a few bubbles issuing forth from the sandy bed. Ugyen threw some stones to see if water could be struck out. I feared lest the stones might rebound towards us from the frozen surface, but they slid smoothly to the furthest margin. We resumed our journey, and after a walk of a few minutes arrived at the margin of the other lake. Phurchung prevented Ugyen from throwing stones on it, saying that the goddess of the lake would take offence at his doing so.

The two lakes are said to be presided over by two mountain deities—husband and wife. These deities take offence at any attempt

¹ Compare the similar legend as to the Lost Valley encircled by the snows of Monte Rosa. See De Saussure's *Voyages*, § 2156.—D. W. F.

of travellers to boil the water of the lake for any purpose. (Once three Nepalese arrived here, one of whom lighted a fire to make tea, the second fetched water, and the third, who was an old man, fell asleep through fatigue. When the water began to boil there was heard the sound of thunder from the cloudless sky. As the roaring continued, the three travellers fled towards Yallung, leaving their loads of mutton and wool behind.) These passed, we ascended to the top of Tsho Chhung Donka and enjoyed a view of the western mountain ranges. Here I thought the trouble of ascending would cease, but it was not so. Our guide said that the way by the western flank of this *La* was covered with snow and ice, and consequently impassable. We therefore had to ascend the Nango Lap-tse, the shortest but the steepest route, being upwards of 13,000 feet above the level of the sea. Up to this place, which receives the rays of the sun from the east, there was only a sprinkling of snow.

Passing the Lap-tse after the usual votive offering of a few scraps of rags inscribed with the *mantras* *Lha sol-lo*, *Lha kyall-lo* ('God be praised, God be praised'), we descended to a small dip filled with snow. This part of the pass midway between the Lap-tse and Mirkanla, where the road from Nepal past Khan-Dophug joins it, is called the Choonjorma (collection of cascades). The snow was deep, although settled down. From the foot-tracks left on the snow and the droppings of yaks and sheep yet fresh, it was evident that three or four days ago some herdsmen had passed by this way. We followed this foot-track and journeyed on very carefully. In several places we sank to our knees in snow, but there being no crevasses we walked on with spirit. I only feared lest from the steepness of the slopes on the west I might slide down to the foot of the *La*. In some places I was helped by one of our coolies, who had lagged behind on account of the weight of his load. The lake near Khan-dophug was spacious, and the green turquoise-like colour of its water was seen from the distance. This passed, we arrived at the spur of Mirkan-la, which was partially free from snow. Our road lay on its western flank, which we found easy. From Mirkan-la we passed on into another saddle of bristling crags, called Tha-Miran Kukyab. The chief of these crags is believed to be the self-grown image of the horrid deity Tamdin or Haya-griba. The rock resembled the head of a horse looking towards the Kang-chan. Below this, at a mile distance, is Pangbo La, where we observed grass. Leaving the dip of Pangbo, we ascended upwards of a mile and a half to reach Seenon-La, whose flanks were covered with juniper and rhododendron bushes. Our way now lay towards the Khan-pachan Valley, where the descent was gradual. A mile's journey brought us to an

extensive moraine called Dolungphug. The boulders here were large and numerous, and of a brown-red colour. The spur of the moraine was covered with snow, which gave us much difficulty in traversing it; but the track laid out by herds of yaks and sheep a few days ago was of great help to us. The sun now entered the clouds of the western horizon (the approach of evening being rather early), and painted the stupendous, sublime peak of the imperial Kang-changua with a dazzling expanse of gold and amber. I stopped for a while to enjoy the view, the most majestic that ever was presented to my eyes, though my companion hurried on to reach the night's stage. The different glacial furrows studded with pale amber-coloured boulders were also distinctly seen on Kangchan beginning gradually to be covered with fog, but the summits remained unsullied by clouds. I heard Ugyen calling from a distance to me to quicken my pace, and I hastened on. At this place a few years ago two Khamba from Darjeeling were overtaken and killed by the natives of Kang-pachan for kidnapping a girl from their village. A good descent of nearly two miles brought us down to Mudan-phug. The snow was deep, and darkness coming on, we plodded on our way much embarrassed. In the meantime our good guide, after depositing his load at Mudan-phug, came back to carry me. He tied me to his broad back with my comforter, and walked off with long strides. I did not ask him to carry me, but he saw my difficulties, and of his own accord came to my help. How invaluable were his services to me in this most trying journey, when my strength had failed me, it is not easy to describe.

At about 7 P.M. we arrived at Mudan-phug, on a table-land with a stream of clear, sparkling water flowing by. Near a small bridge I dismounted from my friend's back and walked down to the side of a boulder, where a fire was lighted by our coolies. My rug was spread before I arrived, and a candle in a broken lantern flickered in the wind. The inside of the Phugpa (the hollow of a rock) was damp, leaky, and uneven: some ashes and charcoal, the residue of the fire of travellers who had preceded us, were spread beneath my rug, which hardly removed the unevenness of the ground. With great difficulty did I accommodate myself in the rock-hollow to pass the night. Phurchung and his brother were now in excellent spirits, and cheerfulness brightened their faces, as they were nearing their homes. Phurchung told us that he noticed smoke at a distance of about a mile, which was probably Menda-phug, and where the natives of Kang-pachan generally halt on their way to the Rong-Yankuthang and other places. Tea and rice were prepared as usual, with which we satisfied our hunger, and conversed as to how we could

best manage to pass unrecognised at Kang-pachan, where the natives were all our old acquaintances. Phurchung told us that he could easily manage to throw dust in the eyes of his friends by telling them we were shikaries from Darjeeling, and this he would prove by showing them our fowling-pieces. He also told us that if he met his friend Phuntsho, he would not care much for the Kang-pachan people, as he had confidence in Phuntsho's ability and courage. Ugyen told us that that plan would hardly answer our purpose, as the natives of Kang-pachan were not all fools. I told Phurchung to speak the truth to everybody, and to enlist their friendship by small rewards. Phurchung answered 'la-la-so,' 'yes, sir.' I then covered myself with the blankets and went off to sleep.

23rd November.—Before getting up from bed I heard the voices of some men, who, after greeting Phurchung, opened a conversation with him. They inquired who we were, and what had brought us there, and some among them, without asking him any questions like strangers, at once inquired why Babu la was going to Tibet at such an unusual time. From inside my blankets I could hear, though not distinctly, all that they said, and Phurchung seemed not to answer their questions, but inquired why they were so late in their winter emigration to the lower valleys, and where his friend Phuntsho and brother Dao Namgya were. No sooner had he asked these questions than they arrived, and his joy knew no bounds, and he laughed long and loud. I did not care to get up as long as these new comers remained; but when I was assured that they were all friends, and liked to see me, I got up. They also inquired if Ugyen was with me. Phurchung then asked his brother and Phuntsho to wait a few minutes, and came to inform me of his friends' arrival. I gave him some bright two-anna and four-anna pieces to distribute among them as chhang-rin (wine-money), to stop their mouths, that they might not spread the news about our journey to Tibet. When I appeared before them, they all bowed before me with the usual loll of their tongues as a sign of respect. They feared it would be impossible for us to cross the snowy Kangla-chhen, which, probably, was already blocked by the October fall of snow. Some among them advised us to enter Tibet by the Wallung Pass, which was easy and snowless. After a few minutes' conversation, after receiving the present of silver pieces, they bid us farewell. Their women lingered behind, as much as to say that they had received no bukshish. I ordered them a two-anna piece each, on receiving which they scampered off to overtake their friends. They told me that they would halt at Namga-Tshal for the night. After a cup of tea, leaving the coolies behind, I and Ugyen started in advance.

Our way now lay along an extensive ancient moraine, the debris of which, consisting of huge reddish boulders, were covered with creeping tamarisks and dwarf junipers. We felt the presence of vegetation by the fragrant smell of the different species of shrubs, of which the latest blossoms were now withering. After a mile's continual descent we arrived at Mendaphug, which is a hollow between two gigantic boulders standing one inclined towards the other. There was some firewood left by the men whom we had met in the morning, and some bamboo vessels for water. The sunlight being powerful, and the shadow of the mountain too cold, an artificial shade was prepared for me by spreading two bed-sheets on a ledge of the boulder, on the lee side of which we had taken shelter. Our men arrived within a few minutes of our reaching this place, and at once busied themselves in fetching water, gathering firewood, and preparing our breakfast. Phurcung now assumed a dignified tone in conversation, having arrived at his own village, where he is counted among the respectables. Finishing a wretched breakfast, consisting of rice and buttered tea, at about 12 A.M. we resumed our journey. From Menda Phug to Mendala the way along the mountain-side for about a mile is comparatively easy, so that one could ride leisurely in perfect safety. We were again in the midst of vegetation, which was gradually growing luxuriant as we descended. The Kang-pachan valley was now coming in view. The sight of the thick alpine forest in the deep glens refreshed our eyes, so long tired with looking on barren rocks and extensive moraines. The cries of pheasants, deer, and antelope could be heard in the distance. From Mendala to Tamala the way, nearly two miles, is fair but narrow. Here we saw some shepherds with their flocks and yaks. The pleasant recollection of the different rhododendron bushes and the juniper and cypress trees of our first journey in this great valley now vividly came to our mind, and I cheerfully pointed them out to my companions. It was here that Ugyen had asked me very seriously about the religious persuasion I really belonged to.

The dip here commences, to continue down to the valley of Yamatari torrent, and the top of it is consecrated to a mountain nymph called Mamo. In a rhododendron hedge I saw several white and red strips of cloth tied as offerings to the fearful Mamo, so greatly dreaded by the people. Dao Namgya, our guide's step-brother, here asked me to furnish him with a strip of white rag to offer to the Mamo. I had no such rags on my person, and to search out our packages would incur loss of time. After some hesitation I offered to tear out a bit from my own red waist-band. He smiled, and said

that the Mamo preferred red rags to white. From this place I was shown the whole labyrinth of the Kang-pachan river. On the spacious bank is situated the ruins of the former Magar forts of Pholi, Gebla-Jong and Rigur Sampajong, Paniphadingjong, Taplajong and Lagyejong, the last of which is in the neighbourhood of Lelyep. These ruins show that once the Magars held sway over this part of the country, and that their power was considerable. The Magar tribe either mixed with the Kiratas of these regions, or were driven to the west by fresh colonies of Limboo, Khambu, and Tibetans from Tibet.

Finding me very exhausted, Dao Namgya begged me to mount his back that he might carry me to his village, telling me that he had carried loads heavier than myself with ease on steep slopes of craggy precipices. After some hesitation I yielded to his request, and no sooner did he find me on his back than he walked down with a quicker pace, and soon overtook Ugyen and others who had preceded us. Phurchung now, sticking the fowling-piece in his girdle, and giving his load to his cousin Phuntsho, marched ahead of us to make arrangements for our accommodation at the village. When I found the way easy, being on the north-western flank of Tama La, I got off Dao Namgya's back and walked down to a flat, grassy valley with tall rhododendron and fern bushes of different kinds.

This place is considered singularly auspicious to Phurchung, being connected with associations of his infancy. It was here that he, while an infant, was blest by Dr. Hooker about thirty-five years ago, who, while exploring this part of Nepal, happened to be passing by the place where his parents tended their hairy flocks. His father, who was suffering seriously from eye-disease, caused by the glare of snow, hearing of the fame of the great doctor, went to him, led by his wife. The latter brought him some presents, in return for which she begged for some medicines for her husband's eyes. Dr. Hooker not only favoured her with excellent medicines to apply to her husband's eyes, but also gave her a pretty-looking coin to hang about the neck of her child, the self-same Phurchung, then only twelve months old. This proud possession adorned Phurchung's neck for about four years, after which it was taken from him by his brother. Phurchung exultingly remarked that he was particularly fortunate, for although other mothers and children subsequently went to beg for similar gifts, Dr. Hooker did not give them anything. His parents, as well as the villagers, predicted that Phurchung would some day become a great man.

On my return from Tibet, while reading Dr. Hooker's *Himalayan*

Journals, I came across the passage¹ which curiously describes the exact story of Phurchung and his mother's interview with Dr. Hooker.

At about 2 P.M. we arrived at Yamatari, a torrent which is formed by the glacial meetings of Chokangchan and Kanchan Jonga, and which forms the deep chasm between those two lofty snowy mountains. The Yamatari gorge possesses very imposing and magnificent scenery. The blue glaciers of its opposite flanks topped the craggy precipices which overhung the forest of silver firs and larches covered with pendant mosses waving like feathers at every blast. There were huge deodars and other tall trees on two sides of our way, in the hollow of which the black bear finds shelter. Two such hollows were pointed out to us, in which two bears were captured by the villagers last year.

There is a little bridge on the Yamatari torrent, just at the entrance of Kang-pa-chan (Gyunsar) village, which we crossed, and got a view of the village flat, perched on which were the wooden huts of the villagers. Some of the houses were now deserted; a few ugly old women, most of whom had goitre, sat basking in the sun, spinning at the thresholds. Phurchung, who had arrived before us, and was rather drunk, came with two of the villagers to receive us with much demonstration of respect. Chhang was ready in wooden bottles, and his mother poured boiling water into them as soon as we were seated on the cushions that were spread for us. Some incense, consisting of a few dried juniper leaves, was burnt, and two incense-sticks smoked before us. After we had emptied half of our murwa bottles each, the housewife prepared fresh bottles, but we politely declined the offer, with the expression 'La-me, La-me,'—'No, madam, no, madam.' Then two brass plates full of red, boiled potatoes were presented to us, and I tasted one or two. This course being over, rice and boiled mutton was served in large quantities, the former wrapped in the broad leaves of a kind of hill plant. The fire was blazing in a corner of the room, fed by fragrant fuel of flesh-coloured rhododendron and other alpine firs. After sunset we all sat round the fireplace, each with a bottle of murwa before him. On account of the fatigue of the journey sleep soon overtook us, and so I went to bed earlier than usual.

24th November.—I got up at 10 A.M. but could see no sun, though

¹ 'Ascending we reached an open, grassy valley, and overtook the Tibetans who had preceded us, and who had halted here to feed their sheep. A good-looking girl of the party came to ask for medicine for her husband's eyes, which had suffered from snow-blindness; she brought present of snuff, and carried a little child, stark-naked yet warm in December; prescribed for the man, and gave the mother a bright farthing.'—Hooker's *Himalayan Journals*.

there were no clouds in the sky. I thought my watch was going wrong, and consulted Ugyen's which, however, pointed to the same time. The valley of Kang-pa-chan being very deep and overhung by very steep snow mountains, which hem it on all sides, is not touched by the sun till 10 A.M. Evening, on the other hand, makes its appearance there earlier than in other places situated in the deep gorges of the Himalayas. After finishing breakfast, which consisted of tea, potatoes, and Indian-corn, I went for a walk in the village, which consists of several terraces sloping down towards the southwest. The houses were surrounded by stone dykes, raised to keep off cattle from destroying the barley. The village, being situated in an alluvial moraine, abounds in boulders. Its position is most advantageous, as several insignificant streams, with clear sparkling water, coming from the right and left, flow into the Kangchan river intersecting the village. The steep flanks of the mountains covered with snow half converted into ice, like some running molten metal, frown over the village on both sides. Their lower slopes were clad with thick forests of tall silver firs, deodars, and larches, with pendant mosses on their branches, and a variety of juniper trees. The village was wooded with various species of rhododendrons. Flocks of wild pigeons flew from one plot of land to another. Dao Namgya fired a few cartridges at them, and shot two pigeons, which were immediately taken to his mother, to be prepared for our dinner. Some sprightly yak calves frisked and played in the dyke enclosures near our host's house. Although the river flowed within a hundred yards, yet its sound was muffled by the flatness of its bed. Higher up and lower down its roar was ceaseless, though faintly heard from our friend's house. On my return to the house I found two men, who saluted me by lowering their hats and lolling out their tongues. They then prayed me to accept an invitation to drink *chhang* at their houses. First I declined their offer, but on second thoughts, considering that to refuse them would be making them unfriendly to us, which was not desirable at such a time, I accepted. Accordingly, at 2 P.M., accompanied by Ugyen and conducted by one of them, I visited Jorgya's house.

This was a new house constructed on a plank platform about six feet from the ground, laid on walls of loose stone. Beneath it a few yak-calves were confined, and two or three Di (she-yaks) were being milked. Jorgya, the host, received us very kindly at the threshold, and seated me on a thick mattress-like seat covered with a piece of Khamba carpet. A newly-made bamboo bottle filled with *chhang* was placed before us, its edge touched with a little butter. Tea was first brought, and the housewife stood with the steaming kettle in

her hand before us, expecting that I would produce my maple-knot cup from my breast coat to receive the frothing drink. The cup was not forthcoming, and our host, perceiving his mistake, at once ran to another room to fetch a China cup for my use. It is customary in Tibet for men of equal rank with the host, or lower, to carry their own cups to drink tea or liquor. But as my position was known to be higher than what any of the villagers could boast of, Jorgya was taken to task by his friends. In haste the cup was brought, and tea served. Then a brass plate full of potatoes was placed before us on a little table. Our host regretted that he could not treat me with yak, of which he had a large supply in his house. I thanked him for his kindness. Parched Indian-corn, milk, and butter were given to the party in abundance, of which we took our fill. Our host then advised us not to attempt going to Wallung, as we would be sure to meet much difficulty. He whispered in my ear that I should quietly go to Yangma, and enter Tibet by the Kangla-chhen Pass, which, according to him, was not wholly inaccessible at this part of the year.

After some uninteresting talk, which according to the prevailing custom was the repetition of the same thing over and over, we took leave of our host, and went over to Pemassang's, who is an uncle of Phurchung. This man's house, not so large as that of Jorgya, was glazed; and his little chapel was tastefully covered and painted. His son and wife respectfully received us at the top of the ladder, and conducted us to the interior of the house, where the fireplace was blazing with fragrant juniper twigs. Pemassang had thick, knotted, flowing curls on his head, which he never combs or dresses. He wears two gold pendant earrings, made in the shape of magnolia flowers. With these he sometimes sits in meditation for the purpose of stopping hail-storms, etc., by the efficacy of his charms. He was grave and serious in his looks and talk. He too advised us to cross the Kangla-chhen in preference to the Walung Pass, for the same reasons as those given by Jorgya. After a few minutes' stay, and a sip through the *Murva* pipe, we bid him good-bye, and hastened to pay a visit to the Tashi-chhoiding monastery. Accompanied by Ugyen and Sonam (Phurchung's youngest step-brother), we crossed the bridge to get to the other bank of the river. Arrived at the monastery we found it almost empty, only here and there one or two old women turning and twirling the prayer wheels. The *mendangs* were newly painted and roofed with deodar planks loosely placed and kept in position by boulder weights. After crossing two ladder stairs, we entered Kangchan Lama's house. The old Lama received us very kindly, and said it was owing to his prayers that he was

able again to see us; while his *ani* (female friend and helpmate, but more a mistress) received us with great concern, for the old gentleman was suffering from *pa-kan* (acidity), and entreated me to let him have some medicines. I gave him a dose of castor-oil and soda. After a sip or two from the *Murwa* bottle we took leave of the old Lama and returned to our lodgings.

At 4 P.M. the sun disappeared from the valley, but his rays still gilded the snowy summit of the eastern mountain groups. Phur-chung, Phuntsho, and Dao were now busily engaged in pounding Indian-corn and barley for the coolies' provisions during their journey through the Kangla-chhen. Some rice was obtained for me, but no mutton could be had, as the sheep of the villagers were taken to the warmer valleys of the Tambur and Kangpachen rivers. We sent a man with a letter to Om-dse Pema at Kangpachan with the customary present of a rupee and a scarf, requesting him to sell us some butter and a couple of sheep. In the evening his wife invited us to drink *chhang* at her house, but we politely declined the invitation, whereupon she sent a *murwa* bottle to our house, and we returned her an eight-anna silver piece.

In the evening, before dark, Ugyen, when trying to open our canvas bag to take out silver pieces, found the key broken. He was astonished to find that somebody had attempted to open, or had opened, the bag to steal money. His face flushed with fear of loss, and more particularly because if it was so, we were actually surrounded by a set of rogues. Ugyen was about to count the contents of the bag to ascertain how much was taken out, but I prevented him from doing so, fearing that the counting of the money before so many strangers would cost us our lives. 'What good,' said I, 'will there be to count the money? What is lost cannot be recovered. We would only place a fresh temptation before the thief's eyes; and, on the other hand, might suspect those who are innocent among our faithful friends. If you think the money is lost, I will quietly suffer the loss, for we should have been careful not to leave the money and our property unprotected.' So the money was not counted. Ugyen suspected Phur-chung, but not I. This event ruffled our cheerfulness, and we went to bed with much uneasiness of mind. Altogether six persons slept in the same room with me. My bedding was spread on a black bear skin. Beside me slept Ugyen and Phur-chung. My sleep was a disturbed one, I often wakening with the impression that the remaining silver was being stolen by some villain.

25th November.—I awoke rather early, anxious to leave the place as soon as possible, and began to count the minutes and hours as

they passed. Phurchung had not yet slept off the effects of the previous night's drinking, and snored fearfully. At 10 A.M. Dao Namgya brought me presents consisting of potatoes, *murwa*, millet, rice, butter, and a goat. We received the presents with great delight, as the goat would be most useful as provision on our way through the snows. I paid him five rupees as a return present (which he accepted most gladly), and asked him to buy us another goat. The widows and other poor people of the village waited upon us with presents consisting of eggs, potatoes, and *murwa* bottles. This they did, not out of any great respect or veneration for me, but evidently with an eye to return presents, which they expected would cover the highest value of their presents. Fortunately there were few people in the village, otherwise they would have drained me of my cash.

At 12 P.M. I ordered Phurchung, gradually recovering from the effects of wine and *murwa*, to make for me some pairs of *kyar*, or wooden snow-shoes, used in the snowy tracts of this part of Nepal. Phuntsho, one of our newly-engaged coolies, told me that he had lately crossed the Kangla Pass with the help of a pair of *kyar*, and reached Jongri, where he had met Captain Harman, who praised much the usefulness of this rude-looking snow-shoe. New ones could not be made on so short a notice, so we had to borrow some pairs of *kyar* from the villagers. In the evening our coolies busied themselves in slaughtering two kids brought for us. The blood was held in a bowl, and then poured into the washed and cleansed intestines of the kids. Ugyen, who was an expert in preparing Bhootea dainties, mixed barley-flour with the blood, with which he stuffed some of the larger intestines. These they boiled in water and packed up in a small wicker-work basket for use on the way. The skin of the stomach of the kids also served as dainties to the coolies.

The legend which I heard of the Kangpachan people and of the Magar, the ruins of whose forts and town we saw in the Kangpachan valley, is very interesting. People say that the account is correct and true. The upper valley of the Kangpachan river, through the grace and the blessing of the royal Kangchan-Jonga, was peopled by men of Tibetan extraction called the *Sherpa*, whose original home was in the mountains of Shar Khambu, or Eastern Kirata. Though inhabiting a place almost surrounded by snowy barriers, they enjoyed immunity from the ravages of ferocious animals and murrain. The lower valley, a few miles below Kangpachan village, on account of the comparatively sluggish course of the river, contained many spacious banks fit to be the habitation of the hillmen. The Magar

tribe of Nepal occupied these tracts. Their chief, who had become very powerful, extended his sway over the people of Kangpachan, and exacted a heavy tax from them. His deputies always oppressed the people to squeeze out money from them, so that at last they were driven through desperation to take revenge on their enemies. Once, when the Magar chief had gone to visit the village of Kangpachan, the people who had matured a conspiracy against him, killed him and his followers, and concealed the dead bodies under ground. The party not having returned to their homes, their relations went all round to search for them. When they failed to get a clue to the cause of the wholesale missing, the queen herself went to Kangpachan to ascertain the cause of her husband's disappearance, but after searching inquiries, failed to clear up her husband's mysterious disappearance. One day, while walking close to the river side, all on a sudden a boulder undermined by a current of the stream slid down, and from underneath some flies flew out buzzing. The queen observed this, and suspecting that something underground must have attracted the flies, instantly dug out the ground, when lo! she discovered the corpses of her murdered husband and his retainers. To the surprise of all she quickly returned home with the exhumed corpse, when she planned the best means of wreaking vengeance on the Kang-pachan murderers. She ordered grand funeral observances for the honour and benefit of the departed soul: great preparations were made for the funeral obsequies, and large bowls filled with wine were brought to entertain the villagers and her followers. The funeral was appointed to take place about six miles up the river, near the Rapachan torrent, midway between the two great villages of the Kang-pachan valley—Gyunsar and Yarsa—so that all the villagers might assemble there. In the wine-bowls poisonous drugs were secretly mixed. After the queen's followers had finished drinking, the poisoned wine was given plentifully, to the Kangpachan villagers, who, not suspecting anything, drank freely. At the end of the ceremony all the Kangpachan people were dead drunk and stupefied, and slept a long sleep from which they never awoke. In this way nearly one thousand men and women died. The infants in arms were taken away by the queen's followers. Only such people escaped who were absent from this dreadful scene.

The place where this foul deed was committed is now called Tong-Shong-phug, or 'the place which witnessed a thousand murders.' The few who survived the massacre carried the news of this horrible affair to Tibet, and invited a large army to wage war on the Magar. The Tibetan army invaded the several Jongs

belonging to the queen, when she shut herself up in one of the castles. She had made no preparations to fight the enemy, but her soldiers defended the place for three months. The Tibetans continued the siege, intending to compel the Magar to surrender by starving them and depriving them of water, the supply of which they stopped from outside. At last the queen, aware of this intention, threw all the water she had in store towards the Tibetan camp. The Tibetans thinking that she had abundance of water-supply inside the castle, raised the siege and went to a distance to watch the movements of the Magar. She immediately collected her men and tried to pursue the enemy, when a skirmish took place, in which she fell nobly fighting. The Tibetans expelled all the Magar from the country (Kangpachan and Tambur valley), and left their properties to the Kangpachan people. Such is the past history of the people of this deep mountain gorge, the like of which I never heard in my journey until I had reached the heart of the Himalayas. The natives, it is evident, were able to harbour the blackest motives in their minds with profound dissimulation. But I rejoiced to have obtained in this region, the wildest and the most gloomy in the Himalayas, the services of the steadiest and most faithful man that I ever came across in the Himalayas. Although Ugyen distrusted him, and he abhorred Ugyen, yet I placed implicit confidence in Phurchung's sincerity and ability, while his devotion and fidelity towards me were boundless.

26th November.—In the early morning we commenced making preparations for starting. The coolies altogether were four in number, of whom three were newly recruited from Kangpachan. They now busied themselves in collecting their outfits, such as blankets, *kyar*, covering for the head, provision, bags, and baskets to carry loads. Our guide now inspected the distribution of the loads among the coolies, himself carrying the fowling-piece as a mark of honour and importance. But the red broadcloth sheath, its most attractive ornament, had been stolen last night. Phurchung had become furious when he had heard of it, and wanted to delay a day or two to detect the thief and recover the lost article. I did not agree to it, but cautioned the coolies lest some articles from their baskets should unaccountably disappear. They nodded with a *La Laso*—‘Yes sir, be it so’; and one after another lifted up their respective loads on their backs, which they had been careful to cover with thick folds of their blankets. When the coolies were started, Phurchung's load being carried by his youngest brother, Sonam Dorje, I, Ugyen, and Phurchung remained behind. Two ponies, which were engaged for us at a hire of eight annas each to

take us half way up the Nango La, were saddled and brought to the gate. After a hearty breakfast we resumed our journey at 9 A.M. The *ama*, or old matrons of the village, now assembled to make us the *chhang-kyel*, or the presentation of wine. It is the custom of the Tibetans invariably to present wine at parting to friends setting out on a distant journey. In our case, it seemed, a little kindness and great hopes of getting return presents led them to make this demonstration, for many persons joined the party who were previously not known to us. With bowls of wine in their right hand and platesful of parched barley and flour in their left, they waited at the eastern approach of the *sampa* (bridge). I walked up to it through rows of pretty-looking, red-coloured brambles which grew side by side with rhododendron shrubs. Each of the *ama* approached to pour a little wine from her wine-jug into a china cup and put a pinch of barley flour in it, and begged us to take a sip as an auspicious observance. 'May we present similar *chhang-kyel* on your safe return' was their prayer to the gods and Buddhas. We thanked them for their kindness, and walked off after placing a couple of rupees in one of their plates, Phurchung telling them to divide the same among themselves. Much pleased with the present, they all went off except Phurchung's stepmother, who shed tears, saying she feared her son would hardly think of returning to Kang-pachan within a year. The *kangssan*, or wooden bridge constructed of planks, is about four feet broad and twenty feet long between the abutting approaches on which they are supported. The planks are loose, but firmly held in position by stone weights, no riveting or screwing being known in this wild country. After crossing the bridge we mounted our ponies and rode on slowly, observing with interest the splashing and bounding waves of the river and the several prayer-wheels turned by streamlets, which come from the back of the monastery to flow into the Kangchan river. A few minutes' ride brought us to the Kani Chhorten, which is only one mile from the monastery, where we found two of our coolies waiting for Phurchung. The latter, who carried a bamboo jug full of wine for the use of the coolies, unable to resist the temptation, here opened the cloth and he and the two coolies emptied the whole bottle here. I told them that they would be without any wine on the La (mountain summit). The way being stony and steep, I asked Phurchung to follow me, so as to help me in difficult ascents. The work of conducting the pony seemed very unpleasant to him, and he begged me to go alone, as the ponies were very sure-footed on the rocky ways. Our way lay amidst thick woods up to Daba-nonpu, a distance of about three miles from Kani Chhorten, whence the natives

formerly used to get their supply of blue clay to make images with. They consider the clay of this place to be particularly pure, since brought down from the summit of a holy mountain by a hill stream. This place belonged to our guide, whose yaks grazed in the pasture lands. It is the base of a moraine, and is overgrown with long grass and alpine forests. The ascent of the moraine was very tedious for the ponies, as the loose boulders slid down very often under the pressure of their hoofs. Close to this place is a lake-bed, almost dry at this time. Ascending the rocky way for a mile from this place, we came to a place called Kamai Phugpa, where the trees diminished in size and the ground was a mass of boulders. Here we crossed a glacial channel, now dry, much resembling an artificial canal. After a few minutes' ride we arrived at another part of the moraine, called Kha-ma-kang-tung, where there is a large table-land. The trees now disappeared, and were succeeded by the region of shrubs and dwarf plants. At the distance of a mile from here we passed another place, called Nango Pungsa, which is the limit of the yaks' pasturing land on this side of the Nango La. Half a mile from this place we passed the steep flank of a black mountain overtopped by the Nango La, where a flock of spotted birds (*Pragpa*) were picking their food from the stones just freed from snow. This place, called Luma Goma, is generally selected as a halting-place by hill-travellers. The collection of debris in immense heaps bespoke the desolate nature of this region. Here and there were a few huge boulders, which being near the stream were covered with lichens. The skies were clear, and the sun shone very brightly. Ugyen here wished me to alight from my pony in order to enable him to shoot some of the *Pragpa*. He fired twice into one of the flocks. Two only were hit on their legs, and flew towards the top of the mountains, where they evidently dropped down dead. The *shikar* being unsuccessful, we resumed our journey, dismissing our ponies and Sonam Dorje, to whom I gave a rupee as reward, and some biscuits and parched Indian-corn. As he was alone, I feared he might be attacked by wild bears, which are said to rove even thus far. He parted from us very much affected—his eyes moist with tears. It was now one o'clock, with a light gale blowing.

Leaving this desolate region, we commenced ascending the snowy Nango La, a lofty mountain, at the base of which, 14,000 feet high, we passed sometimes over solidified snow, at others on soft snow, knee-deep. The bluish shade of the snow and the molten crystallised ice were very pleasant sights, but the effect of the snow was quite different on the feet, which, though inside of felt boots, were getting benumbed with our slow plodding in the snow. The way seemed

endless. Tired and exhausted, I desired one of the coolies, Phuntsho, to take me on his back. He laid down his load on the snow, and, leaning on a boulder, took me on his back, and reached me to a distance of nearly a quarter of a mile, and then, leaving me on a snowless patch, returned to fetch his own load. Ugyen and others followed our track, and we arrived at the source of the Lungkyong Chhu, the course of which we now followed. Two miles to the west of the Nango-Bap-tse is a place called Sayong-kong, a flat table-land which we found entirely covered with snow. From this place there is a direct route to Yangma. Below Sayong-kong, a mile distant, is Sayong-hok, descending whence about two miles we arrived at the valley of the Lungkyong Chhu river. Vegetation reappeared at Sayong-hok, and gradually increased in size and in number as we descended, until the plants gave place to trees on the sides of the Lungkyong Chhu. We crossed here and there some unmelted snows, and, following the downward course of the torrent, arrived at a comparatively flat terrace, where underneath a huge boulder we halted for the night. Phurchung, who had come ahead of us, had collected some long, dry grass growing in the clefts of rocks, and spread them to conceal the damp appearance of the boulder cleft where he had spread our rugs. At 6 P.M. we arrived there, and each remarking the other's weary appearance, rested to discuss the fatigues of the journey. A large fire was lighted and tea prepared. There was slight sleet at night. Red pulse badly cooked with rice and a little kid served for my food. Our companions made a hearty repast of the blood-stuffed intestines of the kid. I slept soundly, though my sides ached in the stony, uneven bed, and the pains over the whole body increased as I got up from bed to resume our journey next morning.

[Those who care to follow the Babu into Tibet may take up his narrative in Mr. Rockhill's annotated edition at this point.]

RINSING'S CROSSING OF THE JONSONG LA

The concluding narrative is that of our companion Rinsing.

A Bhutia, that is a hillsmen, by birth, he is no doubt a better mountaineer than Chandra Das. With us he proved himself a most plucky walker and quite equal to the difficulties we met with. His passage of the Jonsong La at so late a season was a wonderful feat, the more so since his party carried a sick man over it. It is probable, however, that as winter draws on the sun ceases to soften

the crust of snow, and hence travel on the high passes becomes less arduous than immediately after the first great fall. D. W. F.

GUNSA is a large village situated in an open and flat valley enclosed on all sides by snowy mountains, which rise in precipices to a stupendous height. It contains 150 stone and wooden houses, and some of them are two-storeyed. The Khongbachen River emanates from the Jonsongla Pass to the north, and dividing the village from a *Gompa*, or monastery, surrounded by some 40 *pakka*, houses belonging to *Dapas* (priests), it flows through a narrow valley from the south of the village and joins the Yaldoong River. This stream is bridged over in a number of places with timber to facilitate communication between the village and *Gompa*. Here we found some patches of cultivation; the chief production of the soil is wheat, potatoes, barley, and *phaper*, a kind of grain, and other vegetables. The inhabitants are well-to-do people, generally engaged in trading business. Women here spend their time in weaving blankets. Men and women in the village every night go from one family to another to interchange visits, when they are treated with courtesy and presented with cups of *mowa* (a kind of liquor) and fruits, etc. Thus they pass their nights in song and dance. In case of a death occurring in the village, their jolliness is stopped for three days. They observe Tibetan customs. They keep *yaks* and goats and sheep. They are ruled by a headman, whose duty is to collect revenue and taxes. The village lands are fenced round to protect them against musk-deer and *burrel* (*Nao*) and *munal*, which the villagers are forbidden to shoot. The *Gompa* (monastery), being the repository of religious books and images, is governed by a Lama, whose supremacy is acknowledged by the villagers, who monthly send food for him and his disciples (*Dapas*). We passed five nights here.

On the 7th [November], having crossed the Khongbachen River and ascended for seven miles, we reached Nanghola Pass, whence we saw, seven miles to the west down in a valley, a small city called Walloong Zom on the junction of roads, and between two rivers, the Yongma and the Walloong. It contains some 300 houses and a row of shops on either side of a road running through the town. Next day we retraced our steps to Gunsa.

On the 9th, proceeding seven miles along the right bank of the Khangbachen River, which is fed by several small streams from the right and left, we crossed the river to the left by a wooden bridge, and following up the left bank for two and a half miles, we reached the Khangbachen village, the summer location of the inhabitants of the Gunsa. The village at the junction of two rivers called the

Thonak and the Thongchen containing *palka* houses, was found empty on account of the cold season, and was surrounded by barley fields. To the east and opposite the village the Janu (or Junnoo) Snowy Peak is visible, which is an object of worship by the inhabitants of Gunsa. There is a scarcity of firewood and grass. Here a companion of ours fell ill, and from this place he had to be carried.

The Jansongla Pass, which is about two miles south-east of the junction of the boundary of Nepal, Tibet, and Sikkim, is a continuation of the Kinchinjanga range, and is about 20,000 feet in height. Continuing on a northerly course from Gunsa we came to Kangbachen, nine miles; then going on for seven miles we came to Lanok, a cattle-shed, where a road diverges *via* the Chabukla Pass to Tinkijong. From Lanok we proceeded up the river, crossing five miles of a moraine and four miles of a glacier, reaching the Jansongla Pass on the seventh day from Gunsa. This pass cannot be crossed unless assisted by some fifteen men in making a passage over snow. The nearest pass to the west is Chabukla, about 19,000 feet, and to the north Chhorten Nyima, which we afterwards visited; to the south the range cannot be crossed.

Resuming our journey to the east by an abrupt descent of a mile, and proceeding for some miles over a moraine, we arrived at Chizin Lhe, a cattle-shed. Thence we turned to the north and reached the Chhorten Nyima Pass which is on the boundary between Tibet and Sikkim. Along the right bank of the stream which rises from the pass a route runs to Longijong fort. After a day's journey it crosses the Chichu River which issues from Nujin Songra Snowy Range and flows to the west. The fort, which is about seven miles from the river, is surrounded by a small lake. The fort is governed by a *Jongpon*, a tax-gatherer. To the north of the fort, about half a day's journey, is a large lake called *Chomotel-tung*. Retraced our steps from Chhorten Nyima Pass to Chizin, a cattle-shed, and thence resuming our journey to the east along the left bank of Zemu River we reached Shonak (flat), a cattle-shed. Our stock of provisions had run short, and we were obliged to live on game. Some two miles from Chizin, the cattle-shed, we saw the footprints of a wild *yak*. We traced the marks for four miles, when we came across two wild *yaks*, and tried to catch them alive, but they escaped. Our two companions who fell ill died at Shonak flat. Marching for four days without food we arrived at Zemusamdong at the junction of Lachen and Zemu Rivers, where we replenished our stock of provisions which had run short.

Leaving Zemusamdong cattle-shed on the 5th December 1884 and marching for four miles to the south, we reached the Lachen or

Lomting village. This village is situated on the small table-land on the west of the Lachen River. It contains some 110 *pakka* houses and a small monastery to the north. The villagers are well-to-do people, and their trade consists in carrying canes and beams, planks, etc., to Tibet. They possess numbers of *yak*, sheep, and goats, utilising the milk of all their animals very largely in their food. The women are generally engaged weaving blankets of various kinds, which are sold in Sikkim. Besides blankets they take to Sikkim for sale salt, earthen pots, musk, etc. We stopped here four days.

The above is an extract from the 'General Report on the Operations of the Survey of India Department, 1884-85.' Appendix, pp. xlviii to li.

Rinsing (or Rinzin Nimgyat as he is officially called) furnished also a manuscript sketch map to his superiors (see page 363) which in one respect is not in agreement with his Report. In the Report he describes an ascent of the 'Kangla Snowy Peak.' But according to his sketch map the summit climbed was north of the Kang La, while the Kangla Peak of the Survey is situated to the south of the glacier saddle which forms the pass.

APPENDIX D

THE NATIVE NAMES OF THE HIGHEST MEASURED, PEAK

By DOUGLAS W. FRESHFIELD

Reprinted from 'The Geographical Journal' for March 1893.

SOME years ago (in 1886) I argued,¹ with a pertinacity which I am afraid may have seemed presumptuous to some of my readers, against the conviction of the late General Walker, formerly the head of the Indian Survey, that Hermann Schlagintweit, together with Mr. Brian Hodgson, a witness of great weight, and other more recent Residents in Nepal, were mistaken in believing that the snowy peaks visible to the east from the neighbourhood of Katmandu, and called 'Gaurisankar' by the inhabitants, in all probability include the triangulated peak, 29,002 feet, commonly known in England as 'Mount Everest.'

Major (now Colonel) Waddell, an authority on these matters, expresses what I presume has been the popular verdict on the discussion in the following terms:²—

'On the Continent one of the vague Indian mythological names, obtained by Schlagintweit from the Hindooised Nepalese of Khatmandu, for a mountain which he supposed to be identical with the Everest of the Survey, is usually assigned to it—namely "Gaurisankar," one of the titles of the conjugal Indian god Shiva, the Destroyer, and his wife. But it is not generally known that the identity of these two mountains has been conclusively disproved by General Walker, the late Surveyor-General of India, and by Colonel Tanner, his deputy. Owing to the curvature of the Earth, and the interposition of other ranges, it is physically impossible to see

¹ *Proceedings of the Royal Geographical Society*, vol. viii. New Series; and *Alpine Journal*, vol. xvi.

² *Among the Himalayas*. By L. H. Waddell. 1899. I have not altered the spelling of local names adopted by the author.

Everest either from Khatmandu, or the Kaulia or Kakani peaks, whence H. Schlagintweit believed he saw it, and got his local name "Gauri-sankar." As for Kanchenjunga, which Schlagintweit says was also visible from that position, it is shown to be "fully 100 miles *beyond the most remote* point visible from that locality." And Colonel Tanner has directly proved that the Gaurisankar of Schlagintweit is certainly not the Everest of the Survey, but a much smaller and totally different mountain. He writes, "I have now before me the panoramic profiles and angular measurements of Major Wilson, for some time Resident in Nepal, who observed from Sheopuri, a point on the Kaulia ridge. Schlagintweit's Gaurisankar, the 'Everest' of successive political Residents in Nepal, was pointed out to Major Wilson, and from his angular measurements I am able to identify that peak as No. XX., 23,447 feet, more than a mile lower than Everest, and in point of distance very far short of it."

So far Colonel Waddell. His assertions are convincing at first sight; but they hardly bear examination. When we refer to the official map, of which he furnishes a reproduction, we notice that there is nothing in that document to show that it is impossible, either from the curvature of the Earth or the interposition of other ranges, separately or combined, for the peak of 29,002 feet to be seen at a distance of 105 to 110 miles from a height of 7000 to 10,000 feet, some 7 miles north of Katmandu. From Katmandu itself the great peak would apparently be covered by the peak XVIII., 21,957 feet. But what can be seen from the city itself never formed any part of my argument.

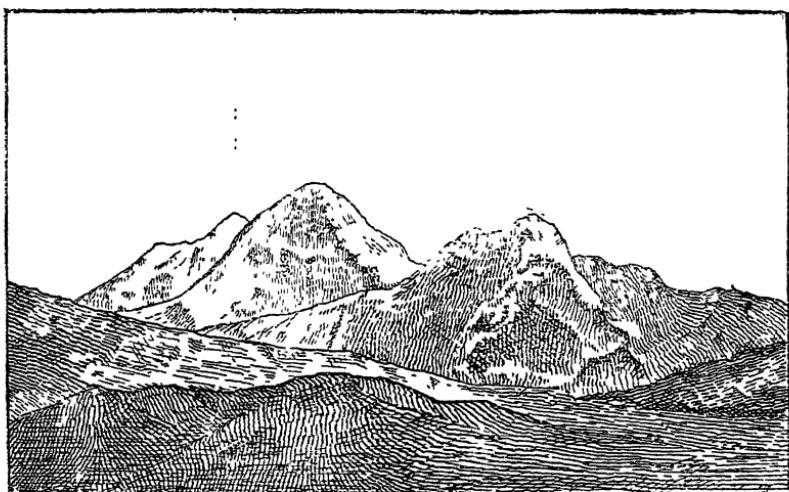
In 1886 I concluded my share in the discussion by stating that it must be left for some competent observer at Katmandu to decide whether the 29,002-feet peak is visible from the hills in the vicinity.

At the end of last year two fresh pieces of evidence turned up. Lieut.-Colonel Pears, the Resident at Katmandu, confirmed to me the report of his predecessors that the snows seen to the east from near Katmandu are locally called 'Gaurisankar,' and Mrs. Pears exhibited at the Alpine Club a sketch of this range. The objection will, of course, be taken that this new evidence by itself is only a confirmation of the statement of earlier travellers that the eastern snows seen from this quarter are called Gaurisankar, and no proof that the 29,002-feet summit is one of the peaks visible. But we have also, in a German work¹ just published, a photograph of the view of the eastern snows from the hill (Kaulia and Kakani are points on the same ridge) visited by Schlagintweit, with what is obviously an enlargement of part of it, showing the principal group.

¹ Durch Indien im verschlossenen Land Nepal. By Dr. Boeck. 1903.

Now, in these photographs, just over the northern flank of a peak we can hardly be wrong in recognising as XVIII., appears a snowy mountain, the outline of which corresponds very closely, taking into account the relative positions from which the photographs were obtained, with the reversed outline of the 29,002-feet peak in Signor Sella's photograph, as seen from the Chunjerma pass in eastern Nepal. And this mountain is, with regard to peak XVIII., in the exact position where 'Mount Everest' should be. It may be, as the surveyors insisted, hidden from the city by peak XVIII., but the situation of Kakani, a few miles further north, suffices to open it.

29,002 feet ?



PEAKS SEEN TO THE EAST FROM HILLS NORTH OF KATMANDU.

(After Herr Boeck's photograph)

This summit was, we understand from Dr. Boeck, pointed out to him as Gaurisankar, and he apparently, quite unconscious both of the previous visit of his fellow-countryman to the spot, and that he is dealing with a controversial matter, congratulates himself on his accomplishment of a pilgrimage to 'Gaurisankar-Everest, the highest mountain of the Earth.'

It seems, therefore, to me that Dr. Boeck has furnished some further ground for believing that Mr. Hodgson may have been right after all, and that the summit known in this country as 'Mount Everest' does form part of the group visible and known as 'Gaurisankar' to the natives of central Nepal. I should add that a summit apparently corresponding in position with the peak XX. of the Survey is also recognisable in one of Dr. Boeck's photographs.

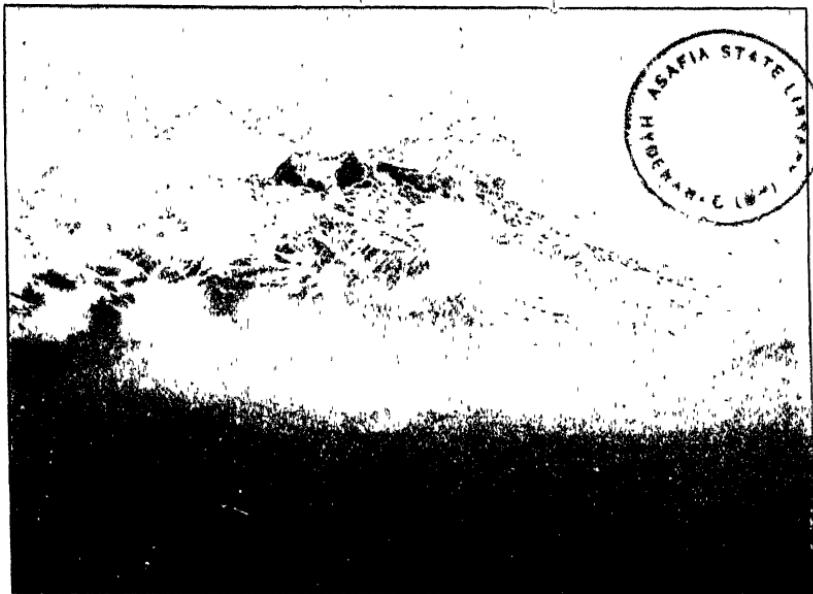
I trust I have made it clear that the point I have been arguing throughout is, whether the 29,002-feet peak is among the snows visible from Kakani, and known as Gaurisankar, and not, whether Schlagintweit, or Major Wilson, or other observers, have identified rightly the particular summit. Most visitors to Sikhim, including Schlagintweit, and, at one time, General Walker himself, mistook Makalu for the highest peak. This does not affect the fact that 'Mount Everest' is visible from Sandakphu. Nor could the failure of Europeans at Katmandu to recognise which was the culminating point of the group the Nepalese call Gaurisankar prove that the 29,002-feet peak is out of sight, or is not called Gaurisankar. An instance nearer home may help to make the case more clear. On the Italian Lakes the Saasgrat has been frequently mistaken for Monte Rosa. No one would argue on this account that Monte Rosa is invisible from the Lakes, or has not a right to its name. The reason for which the surveyors argued so strenuously forty-five years ago that the 29,002-feet peak cannot be the Gaurisankar of Nepal was, of course, that their chief's proceeding in giving the mountain an English name was excused, or justified, at the time by the assertion that it had no local or native name. We have now got two native names, the Indian name Gaurisankar and the Tibetan name Chomokankar, long ago brought forward by Chandra Das, and, though never, so far as I know, seriously disputed, generally ignored, until Colonel Waddell called attention to it.

The illustration in the text is taken from Dr. Boeck's photograph. The two photographic plates, printed separately, show the aspect of Makalu and the 29,002-feet peak from the south-east and somewhat south of east, at distances of 90 and 70 miles respectively.

Dr. Boeck, like Schlagintweit, declares quite positively that from Kakani he recognised Kangchenjunga, Kabru, and Jannu, and, as in a previous year he had made the trip from Darjiling to Pamionchi and Alukthang, he ought to have had no difficulty in recognising such characteristic forms. Dogmatic assertions about the visibility of Kangchenjunga from certain points in central Nepal can, however, carry no conclusive weight until confirmed by substantial evidence. All depends on the exact heights of the standpoint and of the intervening ranges. As far as the curvature of the Earth is concerned there is no difficulty whatever. I have recognised with the naked eye, and examined with glasses, from a summit (Punta di San Matteo) of the Orteler group Monte Viso, 210 miles distant, and some of the triangulations of the Indian Survey depend on rays of even greater length. Kangchenjunga is less than 200 miles from Katmandu, and is 16,000 feet higher than Monte Viso. But, as far as I can judge

from survey maps, the southern outliers of the Gaurisankar group, over 20,000 feet in height, must effectually mask the Sikhim mountains from heights in the immediate neighbourhood of Katmandu. Colonel Gore considers this point to be conclusively established. I trust that Colonel Pears may be able, with the help of the Surveyor-General, to obtain telephotographic views of the ranges visible from central Nepal, with the bearings of their principal peaks, and thus settle definitely the matters still in controversy.¹

¹ The report of the surveyor W. H (published separately with a map in 1887) throws no light on the point under discussion, although he crossed a pass, the Pangu La only 24 miles to the north-west of the 29,002-feet peak.



Telephotograph

THE NEPAL PEAKS FROM HOOKER'S CHUNERMA.

9000 feet

MAKAUD



Telephotograph

THE NEPAL PEAKS FROM SANDAKPHU.

APPENDIX E

LIST OF BOOKS AND MAPS CONSULTED

BOOKS

<i>Turner, Colonel Samuel.</i> —Account of a Mission to the Court of the Tesho Lama,	1806
<i>Sir Joseph D. Hooker.</i> —The Rhododendrons of the Sikkim Himalaya,	1849
<i>Sir Joseph D. Hooker.</i> —Himalayan Journals. 2 vols.	1854
(2nd edition, 1 vol., 1891.)	
" " Introductory Essay to the Flora Indica,	1855
<i>Schlagintweit-Sakunlunski, H. von.</i> —Reisen in Indien und Hochasien, vol. ii. Jena,	1869-72
<i>Desgodins, C. H. Abbé.</i> —La Mission du Tibet,	1872
<i>Gawler, Colonel J. C.</i> —Sikkim, with Hints on Mountain and Jungle Warfare, exhibiting also the facilities for opening Commercial Relations through the State of Sikkim with Central Asia, Tibet, and Western China,	1874
<i>Hodgson, Brian Houghton.</i> —Essays on the Language, Literature, and Religion of Nepal and Tibet, with further papers on the Geography, Ethnology, and Commerce of those Countries,	1874
<i>A Lady Pioneer.</i> —The Indian Alps and how we crossed them, (Trip along the Singalela ridge in winter, probably as far as the Semo La—a trivial and topographically obscure narrative, well illustrated.)	1876
<i>Goblet d'Alviella, Le Comte.</i> —Inde et Himalaya,	1877
(Trip to Pamionchi, etc., the impressions of an observant traveller.)	
<i>Verestchaguin, Mons. et Madame.</i> —Esquisses de Voyage dans les Indes,	1882
(Trip to Jongri in winter by the Russian painter.)	

<i>Temple, Sir R.</i> —Hyderabad, Kashmir, Sikhim, and Nepal. 2 vols.	1887
(Contains an article on Sikhim, and Diaries of Travel.)	
<i>H. H. Risley (and others).</i> —Gazetteer of Sikhim, . . . (Articles historical, scientific, and religious, by writers of authority.)	1894
<i>Louis, J. A. H.</i> —The Gates of Tibet. Calcutta, . . . (Au interesting work full of information as to the present condition of the country and recent political events. Contains botanical and sporting appendixes.)	1894
<i>Boeck, Dr. Karl.</i> —Himalaja Album. Twenty photographs of the Indian Alps. Baden-Baden, . . .	1894
<i>Waddell, Major L. A.</i> —The Buddhism of Tibet, or Lamaism: with its mystic cults, symbolism, and mythology, and in its relation to Indian Buddhism. London, .	1859
<i>Waddell, Major L. A.</i> —Among the Himalayas, . . . (Valuable not only from the extent of the author's travels, but also from his intimate knowledge of Tibetan religion and customs.)	1899
<i>Bomwetsch, B. S.</i> —Handbook to Darjeeling, . . . (Contains much useful information.)	1899
<i>Donaldson, Florence.</i> —Lepcha Land, . . . (The journal of an extensive tour in Outer Sikhim.)	1900
<i>Iggulden, Captain H. A.</i> —Sikhim Expedition of 1868. With an Introduction by Sir Steuart Bayley, . . . (An interesting military narrative.)	1900
<i>O'Connor, Captain F. W.</i> —Routes in Sikhim. With a Map. (A most useful skeleton Handbook, drawn up primarily with a view to military requirements.)	1900
<i>Boeck, Dr. Karl.</i> —Indische Gletscherfahrten, Reisen und Erlebnisse im Himalaja. Stuttgart, . . . (A trip to Alukthang. The most is made of every difficulty by the author, who does not like England.)	1900
<i>Boeck, Dr. Karl.</i> —Durch Indien im verschlossenen Land Nepal. Leipzig, . . . (An account of a visit to Katmandu, with photographs of the view of the Gaurisankar Group from heights near that city.)	1903
<i>Sarat Chandra Das.</i> —Journey to Lhasa and Central Tibet, (Reprint from Report. See p. 362.)	1902

LIST OF AUTHORITIES CONSULTED 361

GOVERNMENT REPORTS AND MAGAZINE ARTICLES

Sherwill, Captain W. S.—Journal Asiatic Society of Bengal, vol. xxii. pp. 540, 611, 'Notes of a Journey in the Sikkim Himalayas' 1854
 (A visit to Jongri.)

Sherwill, Major S. L.—Journal Asiatic Society of Bengal, vol. xxxi. p. 457, 'Journal of a Trip undertaken to Explore the Glaciers of the Kangchenjunga Group' 1862
 (A visit to the Guicha La.)

Blanford, W. T.—Journal Asiatic Society of Bengal, vol. xl. part ii. p. 367, 1871

Mallet, F. R.—Memoirs of the Geological Survey of India, vol xi. p. 39, 1875
 (On the geology of Sikkim.)

Edgar, Sir J. Ware.—Report on a visit to Sikkim, 1874
 (Interesting from the views expressed as well as for its information.)

Déchy, Maurice de.—Mountain Travel in the Sikkim Himalaya. Alpine Journal, vol. x, 1880

Temple, Sir R.—Proceedings of the Royal Geographical Society, vol. iii. p. 321, 1881

Macaulay, Coleman.—Report of a Mission to Sikkim and the Tibetan Frontier, 1885

Graham, W. W.—Proceedings of the Royal Geographical Society, vol. iii. N.S., p. 427, 1884

Graham, W. W.—Alpine Journal, vol. xi. pp. 365, 402; vol. xii. pp. 25, 265, 1884

Graham, W. W.—Good Words, 'Up the Himalaya,' 1885
 (Mr. Graham's accounts of ascents made by him with Emil Boss and U. Kaufmann of Grindelwald. The ascent of Kabru, 24,015 ft., has been thrown doubt on, but not disproved.)

Survey Reports of India for 1883-84, 1884-85, 1887-88

Report on Explorations in Nepal and Tibet by a native explorer, M. H., 1887
 (A journey through Eastern Nepal, passing through the Lapchikang Group.)

Sarat Chandra Das.—Narrative of a Journey to Lhasa, 1885
 (Contains the story in much detail of the Babu's

mountaineering exploits in Eastern Nepal when on his way to Lhasa on his second journey. The version issued by the Royal Geographical Society is considerably abbreviated and edited in this portion of the narrative.)

<i>Sarat Chandra Das</i> .—Journal of Buddhist Text and Anthropological Society, vol. viii. p. 1,	1899
(Reprint of the Babu's Official Report of his first journey through Eastern Nepal to Tashilumpo.)	
<i>Bose, P. W.</i> .—Geological Survey of India Reports, vol. xxiv. part 1, p. 46; part 2, p. 217,	1891
(A trip to the Guicha La, with a careful description of the Praig Chu Glaciers.)	
<i>Waddell, Major L. A.</i> .—Place and River-Names in the Darjiling District and Sikhim. Journal of Asiatic Society of Bengal, vol. lx.,	1891
<i>Hofmann, T.</i> .—Proceedings of the Royal Geographical Society, New Series, vol. xiv.,	1892
(A brief account of an exploration of the Zemu Glacier made in company with the Political Officer, Mr. White.)	
<i>Dent, Clinton T.</i> .—Can Mount Everest be ascended? Nineteenth Century. October,	1892
<i>Strahan, Lieut.-Colonel</i> .—Report on Explorations in Sikhim, Bhutan, and Tibet,	1889
(Narratives of the travels of native explorers.)	
<i>Gammie, G. K.</i> .—Kew Bulletin for	1893
(Account of a botanical tour in Sikhim in 1892. Repeated in Records of Botanical Survey of India, vol. i. No. 2.)	

MAPS

Map of Sikhim and Eastern Nepal. By Sir J. D. Hooker.		
1 inch to 10 miles,		1854
Sketch Map of District north of Kangchenjunga. By		
Chandra Das. Issued with a Report in		1879
Reprinted,		1900
Panoramic Profile of the Hill Ranges of Sikhim,		1882
Map of the Routes followed by Native Explorers with some		
Results of the Surveys by the Darjiling Survey Party,		
1879-82. Compiled by Captain H. I. Harman. 1 inch		
to 16 miles,		1882
MS. Sketch of Country around Kangchenjunga. By Rinzin		
Nimgyat. 1 inch to 4 miles,		1884-85
MS. Sketch of part of East Nepal. By Mr. W. Robert,		
Assistant-Surveyor. 1 inch to 2 miles,		1881-83
North-Eastern Transfrontier. 1 inch to 2 miles. Sheets		
Nos. 7 $\frac{N.W.}{3}$, and 7 $\frac{N.W.}{1}$, and part of 6 $\frac{S.W.}{3}$,		1888
North-Eastern Transfrontier. 1 inch to 8 miles. Sikhim		
and Bhutan, with parts of Nepal, Tibet, and adjacent		
British Territory. Sheet No. 7,		1889
Photograph of an official Map of Sikhim. 1 inch to 4 miles,		1889
Map showing approximate Race Distribution in Sikhim,		1892
Skeleton Map of Sikhim. 1 inch to 4 miles,		1892
(Issued with 'Gazetteer of Sikhim.')		
Skeleton Route Map of Sikhim. 1 inch to 2 miles.		
(Three Editions issued with 'Routes in Sikhim'),		
	1892, 1894, 1900	
Map of Sikhim. By Major L. A. Waddell (in 'Among the		
Himalayas'). 1 inch to 8 miles,		1899
Sketch Map of the Glaciers of Kangchenjunga. Con-		
structed by E. J. Garwood. 1 inch to 2 miles (nearly),		1902
Map of the Northern Frontier of Sikhim. By the Political		
Officer, Mr. C. White. Two Sheets. 1 inch to 2 miles,		1903

APPENDIX F

CATALOGUE OF PHOTOGRAPHS TAKEN BY SIGNOR VITTORIO SELLA DURING THE TOUR OF KANGCHENJUNGA¹

SIKHIM.

	SUBJECT.	LOCALITY.
1	A Forest Path,	Between Kalimpong and Pedong.
2		{ " " "
3		{ " " "
4		{ Near Pakyong.
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
21		
22		
23		
24		
25		
26		
27		
28		
29		
30		
31		
32		
33		
34		
35		
36		
37		
38		
39		
40		
41		

¹ These photographs can be procured of Messrs. Spooner, The Strand, W.C.

SIKHIM.

	SUBJECT	LOCALITY
43	Northern Spurs of Siniolchum, . . .	Zemu Glacier.
44	Simvu, . . .	," "
45	Kangchenjunga, . . .	," "
46	Peaks N. of Kangchenjunga, . . .	," "
47	Kangchenjunga, . . .	," "
48	<i>Rheum nobile</i> (Wild Rhubarb), . . .	," "
49	Gentians (natural size), . . .	," "
51	Edelweiss, . . .	," "
52	<i>Delphinium glaucum</i> , . . .	," "
53	Camp below the Moraine, . . .	," ", about 15,200 feet.
54	Kangchenjunga (Telephotograph), . . .	," "
55	Siniolchum (Telephotograph), 4 miles off, . . .	," "
56	Siniolchum, . . .	," "
59	Chumalhari (Telephotograph), . . .	," From above Zemu Valley.
60	Spurs of Siniolchum, . . .	{ " ", "
61	Siniolchum, . . .	{ " ", Glacier.
62	Kangchenjunga, . . .	," "
63	his Kangchenjunga with Cloud Scarf, . . .	," "
64	Siniolchum, . . .	," "
65-6	Siniolchum & Kangchenjunga (Panorama), . . .	," "
67	Camp in New Snow, . . .	," "
68	Tumrachen Valley, . . .	Tumrachen Valley.
69	View S. from Thé La (Panorama), . . .	Slope below Thé La.
70	Siniolchum (Telephotograph), . . .	Thé La.
71	Lungma Valley, . . .	," "
72	Lhonak (Panorama), . . .	{ " ", "
73	Mountains above Lhonak, . . .	Foot of Thé La.
74	Camp near Gora Chu, . . .	Lhonak.
80	Shrubs, . . .	About 14,500 feet.
81	Flowers, . . .	," "
82	Panorama of the Kangchenjunga and Chortenima Ranges, . . .	{ Lhonak, above Sayok Chu, from about 17,000 feet.
83	Kangchenjunga, . . .	," "
84	<i>Delphinium glaucum</i> , . . .	," "
85	Saxifrages, . . .	," "
86	Range to N.E., on Tibetan Frontier (Panorama), . . .	{ From 18,500 feet on ascent of Jonsong La.
87	The Langpo Peak, . . .	Ascent to Jonsong La.
88	Chain N.E. of Lhonak and Donkia Pass (Panorama), . . .	{ From 19,500 feet below final ascent to Jonsong La.
89	The Kangchenjunga Group, . . .	From the Jonsong La, looking S.

NEPAL.

	SUBJECT.	LOCALITY.
102	Kangchenjunga,	300 feet below Jonsong La, W. side.
103	Camp on Glacier,	About 19,700 feet.
105	Kangchenjunga,	
106	A Minor Summit,	
107	Kangchenjunga,	
108	Camp at Pangperma,	
109		
110	Panorama of N.W. Nepalese face of the	
111	Kangchenjunga Group from Pang-	
112	perma,	
113		
114	Edelweiss,	Kangbachen Valley.
115	Western Spurs of Kangchenjunga,	" "
116		
117	In the Kangbachen Valley,	Near Ramthang.
118	Kangbachen,	Kangbachen District.
119	Jannu and Glacier,	" "
120		
121	Jannu and Kangbachen Valley,	" "
122		
123	Jannu Group,	" "
124	In the Kangbachen Valley,	" "
125	" "	" "
126		
127	Khunza Village,	" "
128	Environs of Khunza,	" "
129	The Yamatari Valley,	Near Khunza. "
131	Jannu Group,	
132	Jannu,	
133	The peaks, 21,880 and 21,820 feet,	Telephotographs from Chun-
134	Lapchikang Group (Mount Everest, 70	jerma.
135	miles distant),	" "
136		
137	Panorama of Nepalese Ranges,	From Chunjerma.
138		
139		
141	Jannu Group,	" "

SIKHIM.

142	Huts at Jongri,	Sources of Ranjit.
144	Kang La,	From Jongri.
145	Kabru and Kangchenjunga,	" "
146	Pandim and Jubonu,	" "
147	Narsing,	
148	Kangchenjunga,	Telephotograph from Jongri.
149	Pandim,	
150	Pandim from Praig Chu,	Path to "Guicha La" "
151	Praig Chu Valley,	
152	" "	" "
153	" "	" "
154	Kangchenjunga at Sunset,	" "
155	Vegetation on the Praig Chu,	" "
156	Pandim,	" "
157	Kangchenjunga and Guicha La,	" "
158	Kangchenjunga,	" "

SIKHIM.

	SUBJECT.	LOCALITY
159	Morainic Lake,	Path to Guicha La.
160		
161	Chain W. of Praig Chu Valley,	„ „
162	Kabru and Kangchenjunga,	„ „
163	Kangchenjunga and Guicha La,	„ „
165	Kabru,	From ridge of Kabur.
166	Kabru (Cloud Effect),	„ „
167	Kang La,	
168	Range N. of Kang La,	
169	Kabru and Kangchenjunga,	
170	Simvu and Pandim,	Panorama from Kabur.
171	Jubonu,	
172	Narsing,	
173	Foothills of Sikhim,	From Jongri.
174	<i>Saussurea gossypiphora</i> ,	Below Kabur.
175	<i>Coloneaster rotundifolia</i> ,	Near Jongri.
177	Pandim and Kangchenjunga,	Between Jongri and Yoksun.
178	In the Forest,	
179	Virgin Forest,	„ „
180	In the Forest,	„ „
181	Bridge on the Praig Chu,	„ „
182	Kabru,	Near Pamionchi.
183	Kabru (Telephotograph),	„ Pamionchi. „
184	Kabru and Kangchenjunga at Sunrise,	
185	The Temple,	„
186	Priests on the Temple Stairs,	„
187	Interior of the Temple,	„
188	Priests' Houses,	„
189	A Young Lepcha,	„
190	Rinsing, the Native Surveyor,	
191	Darjiling (General View),	Darjiling.
192		
193	Kangchenjunga Group,	„
194		
195	Kangchenjunga Group (Telephotograph),	„
196		

Enlargements of many of these photographs can be obtained. The ordinary size is about 12 x 16 inches.

Over a hundred stereoscopic views were also secured, sets of which will be sent for inspection to responsible applicants by Signor Vittorio Sella, Biella, Italy.

INDEX

*Where the spellings of local names used by the Punjabis differ from those adopted in the text,
they are not, as a rule, separately indexed*

Abode of Snow, The, quoted, 12.
 Alaska expedition, Duke of the Abruzzi's, 6.
 Alpine flora, 107, 110, 130, 139.
 — guides, 6.
 — regiments, 10, 11.
 — travel, 3.
 Altitude, effects of, 48, 104, 116, 145, 154, 161, 194, 226, 228, 237-9, 308, 319, 320, 322, 333.
 Alukthang, Vale of, 222-4, 234, 279, 282.
 — Glaciers of, 234.
 Amno Chu, 62.
Among the Himalayas quoted, 4, 21, 47, 87, 105, 201, 208, 304.
 Aneroid, Watkin, 305.
 Animals, 108, 329.
 Armour, Tibetan, 272.
 Arun Valley, 201.
 Augen-gneiss, 290, 291.
 Authorities, list of, 359 *seq.*

BAKHM, 245.
 Bayley, Sir Steuart, quoted, 59, 64.
 Bhutan, 16.
 Bhutias, 34 *seq.*, 253.
 Bidang Cho Lake, 280.
 Blanford, Dr., quoted, 89, 280, 299, 307.
 Boeck, Dr., quoted, 200, 304, 356.
 Bose, P. N., quoted, 225, 246-7, 282, 290, 307.
 Boundary of Nepal and Sikkim, 137, 312.
 — of Tibet and Sikkim, 65, 137.
 Bridge, natural, 102.
 Bruce, Major, 10, 12.
 Buddhism, 252.
 Burhel, 108, 175.

CHABOK CHU, 176 *seq.*
 — La (Chatang La), 24, 176, 302, 309, 319-21, 352.
 Chaits (Chortens), monuments, 57, 178.
 Chakang, 259.

Chatang La (Chabok La), 24, 176, 302, 309, 319-21, 352.
 Chemthang, 226.
 Chitral, 7.
 Chogori or 'Mount Godwin Austen,' 18, 201.
 Cholamo Lake, 278.
 Cho La, the, 278.
 Chomtomo, 97, 135, 147.
 Chomokankai, or Gaurisankar, or 'Mount Everest,' 17, 199-202, 327, 357.
 Chortenma La, the, 21, 25, 144, 148, 153, 286, 287, 288, 321, 322, 352.
 Chu-kar-pang-zang, 312.
 Chumalahr, 127, 128.
 Chumbi, Valley of, 16, 63, 68, 138, 241.
 — rainfall in, 63.
 Chumbok La, 324.
 Chungthang, 78, 87.
 Chunjerma, 196-200, 313; (Choonjorma), 333, 356.
 Clay Slates, 323.
 Cleft Peak, the, 221.
 Climbing season, the, 5, 240.
Climbing on the Himalaya quoted, 12.
 Cloud Gap, the, 114, 227, 232.
 Colle, Dr. N., quoted, 12.
 Coolie, death of a, 191.
 Coolies, 8, 74, 96, 117, 131-5, 153, 162, 244, 248.
 — characteristics of, 8, 9, 131, 132, 153, 162-3.
 Conway, Sir Martin, 12, 18.
 Critics, perverse, 134.
 Croft, A. W., note by, 309.
 Crystalline rocks, 276, 323.
 Curios, Tibetan, 262 *seq.*

DABA-NONPU, 348.
 Dak Bungalows, or Resthouses, 45, 50, 57, 81, 255, 259.
 Dalings, the, 281, 293.
 Damaru, 265.

Damudas, the, 281, 293.
 Darjiling, 15, 16, 30-44, 240.
 —— geology of, 281.
 —— great storm at, 122, 240.
 —— journey to, 30-2.
 Das, Sarat Chandra, 24-5, 179, 205, 207, 212, 301, 302.
 —— —— narratives by, 309 *seq.*
 Dechen Rolpa Monastery, 207, 334.
 Demon worship, 37, 69.
 Denudation, effects of, 277, 294 *seq.*
 Desgodins, Father, 55.
 Dhung-Chhen, 264.
 Dhung-kar, 264.
 Devil Dance, a, 256, 257.
 Dikchu, 80, 278.
 Dogpas, or robbers, 142, 321.
 Dolungphug, 337.
 Donkia (Donkhyia) Pass, 21, 278.
 Dorjé, 265.
 Dover, Mr. C., 48, 75, 130, 135, 158.
 Dubdi Monastery, 249.
 Dubdi-Pamionchi district, the, 295.
 Dufferin, Lord, 66.

EARLE, Mr., 47, 75, 214.
 Earthquake near Kangchenjunga, 278.
 Edelweiss, 107, 175.
 Edgar, Sir J. Ware, the late, quoted, 61, 65.
 Elwes, Captain, 280.
 'Everest, Mount.' *See 'Mount Everest.'*

FLOWERS, Alpine, 107, 110, 130, 139.
 Foothills, the, 45 *seq.*
 Forests, 49, 55, 57, 86, 91, 98-100, 182, 246, 254.
 Fort Shiker, 293.
 Forts, Magar, 340.
 Fossiliferous limestone, 278, 288.

GAMMIE, Mr., 65.
 Gamothang Lake district, 278.
 Gantok, 58 *seq.*, 66-76.
 Garnetiferous mica schist, 284.
 Garwood, E. J., *passim*; illness of, 128.
 —— —— on geology, 275-99.
 —— —— on maps, 303-7.
 Gaurisankar, or Chomokankar, or 'Mount Everest,' 17, 199-202, 327, 357.
 Geological literature, 283; maps, 307.
 Geology of Nepal, 276.
 —— of Sikkim, 275-293.
 Ghoom, 48.

Giagong, 19, 96-97.
 Glaciers, 22-3, 149-51, 225, 233-7, 276; Himalayan and Alpine compared, 63.
 —— distinctive features of, 165, 166.
 —— extinct, 236.
 —— protection by, 141, 298.
 —— retreat of, 140, 233, 236.
 Gnathong, road to, 56.
 Gooral, 108.
 Goraphu (Goa Chu), 140, 287.
 Gore, Colonel St. G., 202, 358.
 Graham, Mr. W. W., ascents by, 12, 206, 209, 230.
 Green Lake Glacier, 110, 112.
 —— —— the, 110.
 Grotto in ice, 152.
 Guicha La, the, 86, 220 *seq.*, 225, 279, 304.
 Gumpas (Buddhist Monasteries), 37, 68, 249, 257, 263-9.
 Gurkhas, 11; police, 75, 95, 153, 161, 184.
 Gyaling, 264.
 Gyatsho Ugyen, 25, 27, 31 *seq.*

HANGING VALLEYS, 233, 296.
 Harman, Captain, the late, 22, 345.
 Heights measured by E. J. Garwood, 305, 306.
 —— official, 28; Professor Garwood's and Mr. White's, 140, 144.
 Highest mountain in the world, the, 354 *seq.*
 Himalaya, the, 4; extent of, 5; from plains, 31; from Darjiling, 39-44; geology of, 276.
Himalayan Journals, Hooker's, quoted, *passim*.
 Himalayan travel, 4, 74; provisions for, 6; mountaineering expeditions, 12; glaciers, 13; scenery, 14.
 Hodgson, Brian, quoted, 199, 354.
 Hofmann, Mr. T., 20, 21, 107-8.
 Hofmann's Lake, 110.
 Hooker, Sir Joseph, 12, 19, 32, 35, 46, 57, 60, 64, 83, 97, 99, 187, 196, 197, 233, 246, 251, 255, 271, 275 *seq.*, 294, 307, 340; quoted, 64, 189, 196-7, 246, 251, *passim*.
 Hunza, 7.

Ice, a protective agent, 141, 298.
Indian Alps and How We Crossed Them quoted, 212, 324.